CITY OF HOUSTON

HOUSTON PUBLIC WORKS

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

WBS NO. R-000267-0174-3
60% SUBMITTAL
ISSUE DATE: AUGUST 2025

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CHRIS HOLLINS

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Craig Alexander Perry
Engineer
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

COVER SHEET

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

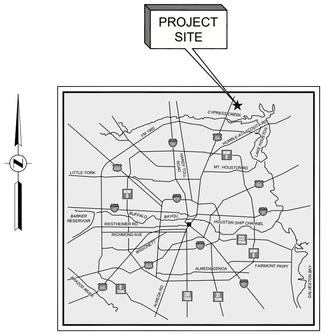
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-001	HORIZ: NONE VERT: NONE
SHEET NO. 1 OF 225	DRAWING SCALE

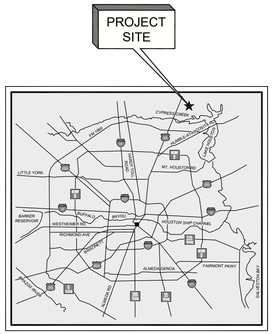
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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\001 G-001.dwg



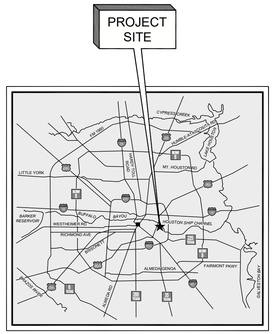
CHESTNUT RIDGE LIFT STATION
LOCATION MAP

SCALE: NONE



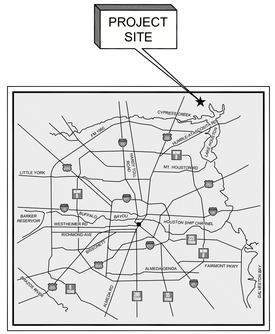
LADBROOK LIFT STATION
LOCATION MAP

SCALE: NONE



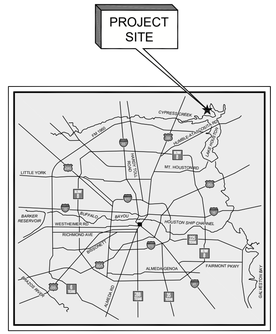
MAGNOLIA PARK LIFT STATION
LOCATION MAP

SCALE: NONE



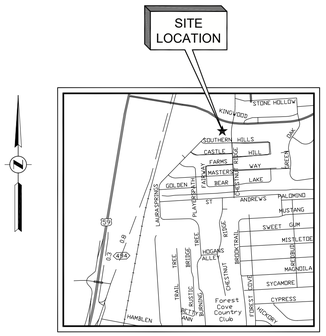
PINE PRAIRIE LIFT STATION
LOCATION MAP

SCALE: NONE



STATELY OAKS LIFT STATION
LOCATION MAP

SCALE: NONE

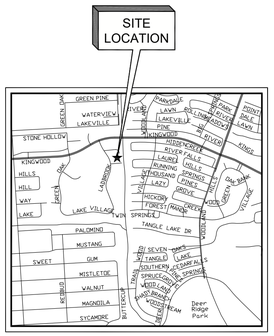


VICINITY MAP

SCALE: NONE

2511 CHESTNUT RIDGE RD, KINGWOOD, TX 77339

KEY MAP NO. 336A

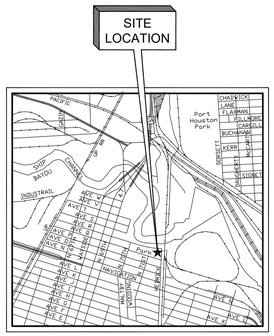


VICINITY MAP

SCALE: NONE

2307 LADBROOK DR, KINGWOOD, TX 77339

KEY MAP NO. 336B


SITE LOCATION
Port Houston Park
CHADWICK
LANE
FLAMAN
FILLMORE
ARBELL
BUCHANAN
KERR
SLOCUM
PORT T
PACIFIC
SLIP
BAYOU
INDUSTRIAL
AVE A
AVE B
AVE C
AVE D
AVE E
AVE F
AVE G
AVE H
AVE I
AVE J
AVE K
AVE L
AVE M
AVE N
AVE O
AVE P
AVE Q
AVE R
AVE S
AVE T
AVE U
AVE V
AVE W
AVE X
AVE Y
AVE Z
BURNETT
CANAL
RAILROAD
HOUSTON
BELT &
TERMINAL
RAILWAY
CO.
BRIDGE
DIVISION
CANAL
TURNING
BASIN
CANAL
TURNING
BASIN
CANAL
TURNING
BASIN

SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		G - GENERAL
1	G-001	COVER SHEET
2	G-002	LOCATION AND VICINITY MAPS
3	G-003	INDEX OF DRAWINGS SHEET 1 OF 2
4	G-004	INDEX OF DRAWINGS SHEET 2 OF 2
5	G-005	GENERAL CONSTRUCTION NOTES SHEET 1 OF 2
6	G-006	GENERAL CONSTRUCTION NOTES SHEET 2 OF 2
7	G-007	ABBREVIATIONS LEGEND AND SYMBOLOGY
8	G-008	CONSTRUCTION SIGN
9	G-101	CHESTNUT RIDGE LIFT STATION HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET
10	G-102	CHESTNUT RIDGE LIFT STATION HARRIS COUNTY FLOOD CONTROL DISTRICT REVIEW SHEET
11	G-201	LADBROOK LIFT STATION HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET
12	G-202	LADBROOK LIFT STATION HARRIS COUNTY FLOOD CONTROL DISTRICT REVIEW SHEET
13	G-301	MAGNOLIA PARK LIFT STATION HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET
14	G-302	MAGNOLIA PARK LIFT STATION HARRIS COUNTY FLOOD CONTROL DISTRICT REVIEW SHEET
15	G-401	PINE PRAIRIE LIFT STATION HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET
16	G-402	PINE PRAIRIE LIFT STATION HARRIS COUNTY FLOOD CONTROL DISTRICT REVIEW SHEET
17	G-501	STATELY OAKS LIFT STATION HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET
18	G-502	STATELY OAKS LIFT STATION HARRIS COUNTY FLOOD CONTROL DISTRICT REVIEW SHEET
		F - FIRMETTE
19	F-101	CHESTNUT RIDGE LIFT STATION NATIONAL FLOOD HAZARD LAYER FIRMETTE MAP
20	F-201	LADBROOK LIFT STATION NATIONAL FLOOD HAZARD LAYER FIRMETTE MAP
21	F-301	MAGNOLIA PARK LIFT STATION NATIONAL FLOOD HAZARD LAYER FIRMETTE MAP
22	F-401	PINE PRAIRIE LIFT STATION NATIONAL FLOOD HAZARD LAYER FIRMETTE MAP
23	F-501	STATELY OAKS LIFT STATION NATIONAL FLOOD HAZARD LAYER FIRMETTE MAP
		C - CIVIL
24	C-101	CHESTNUT RIDGE LIFT STATION DEMOLITION SITE PLAN
25	C-102	CHESTNUT RIDGE LIFT STATION DEMOLITION SECTION VIEW
26	C-103	CHESTNUT RIDGE LIFT STATION PROPOSED SITE PLAN
27	C-104	CHESTNUT RIDGE LIFT STATION PROPOSED PLAN VIEW
28	C-105	CHESTNUT RIDGE LIFT STATION PROPOSED SECTION VIEW
29	C-106	CHESTNUT RIDGE LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES
30	C-107	CHESTNUT RIDGE LIFT STATION VALVE AND PIPE FITTING SCHEDULE TABLES
31	C-201	LADBROOK LIFT STATION DEMOLITION SITE PLAN
32	C-202	LADBROOK LIFT STATION DEMOLITION SECTION VIEW
33	C-301	MAGNOLIA PARK LIFT STATION DEMOLITION SITE PLAN
34	C-302	MAGNOLIA PARK LIFT STATION DEMOLITION SECTION VIEW
35	C-303	MAGNOLIA PARK LIFT STATION PROPOSED SITE PLAN
36	C-304	MAGNOLIA PARK LIFT STATION PROPOSED PLAN VIEW
37	C-305	MAGNOLIA PARK LIFT STATION PROPOSED SECTION VIEW
38	C-306	MAGNOLIA PARK LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES
39	C-307	MAGNOLIA PARK LIFT STATION VALVE AND PIPE FITTING SCHEDULE TABLES
40	C-401	PINE PRAIRIE LIFT STATION DEMOLITION SITE PLAN
41	C-402	PINE PRAIRIE LIFT STATION DEMOLITION SECTION VIEW
42	C-403	PINE PRAIRIE LIFT STATION PROPOSED SITE PLAN
43	C-404	PINE PRAIRIE LIFT STATION PROPOSED PLAN VIEW
44	C-405	PINE PRAIRIE LIFT STATION PROPOSED SECTION VIEW
45	C-406	PINE PRAIRIE LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES
46	C-407	PINE PRAIRIE LIFT STATION VALVE AND PIPE FITTING SCHEDULE TABLES
47	C-501	STATELY OAKS LIFT STATION DEMOLITION SITE PLAN
48	C-502	STATELY OAKS LIFT STATION DEMOLITION SECTION VIEW
49	C-503	STATELY OAKS LIFT STATION PROPOSED SITE PLAN
50	C-504	STATELY OAKS LIFT STATION PROPOSED PLAN VIEW
51	C-505	STATELY OAKS LIFT STATION PROPOSED SECTION VIEW
52	C-506	STATELY OAKS LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES
53	C-507	STATELY OAKS LIFT STATION VALVE AND PIPE FITTING SCHEDULE TABLES
54	C-508	CIVIL STANDARD DETAIL SITE FENCING AND ACCESS GATE DETAILS

SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		SV - SURVEY
55	SV-101	CHESTNUT RIDGE LIFT STATION EXISTING SITE SURVEY AND CONTROL POINTS TABLE
56	SV-201	LADBROOK LIFT STATION EXISTING SITE SURVEY AND CONTROL POINTS TABLE
57	SV-202	LADBROOK DRIVE GRAVITY ROUTE EXISTING SURVEY AND CONTROL POINTS TABLE
58	SV-203	LADBROOK DRIVE GRAVITY ROUTE EXISTING SURVEY AND CONTROL POINTS TABLE
59	SV-204	LADBROOK DRIVE GRAVITY ROUTE EXISTING SURVEY AND CONTROL POINTS TABLE
60	SV-205	LADBROOK DRIVE GRAVITY ROUTE EXISTING SURVEY AND CONTROL POINTS TABLE
61	SV-206	LADBROOK DRIVE GRAVITY ROUTE EXISTING SURVEY AND CONTROL POINTS TABLE
62	SV-301	MAGNOLIA PARK LIFT STATION EXISTING SITE SURVEY AND CONTROL POINTS TABLE
63	SV-401	PINE PRAIRIE LIFT STATION EXISTING SITE SURVEY AND CONTROL POINTS TABLE
64	SV-501	STATELY OAKS LIFT STATION EXISTING SITE SURVEY AND CONTROL POINTS TABLE
		S - STRUCTURAL
65	S-101	CHESTNUT RIDGE GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS
66	S-102	CHESTNUT RIDGE EQUIPMENT PAD PLAN AND DETAILS
67	S-301	MAGNOLIA GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS
68	S-302	MAGNOLIA TYPICAL DETAILS
69	S-303	MAGNOLIA ODOR CONTROL PAD PLAN AND DETAILS
70	S-304	MAGNOLIA PUMP STATION - PLAN AT GRADE
71	S-305	MAGNOLIA PUMP STATION - CAISSON CONSTRUCTION AT WET WELL
72	S-306	MAGNOLIA PUMP STATION - BASE SLAB PLAN
73	S-307	MAGNOLIA ELECTRICAL PAD - PLAN
74	S-308	MAGNOLIA ELECTRICAL PAD - SECTION AND DETAILS
75	S-401	PINE PRAIRIE GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS
76	S-402	PINE PRAIRIE TYPICAL DETAILS
77	S-403	PINE PRAIRIE ODOR CONTROL AND ELECTRICAL PAD PLAN AND DETAILS
78	S-404	PINE PRAIRIE PUMP STATION - PLAN AT GRADE
79	S-405	PINE PRAIRIE CAISSON CONSTRUCTION AT WET WELL
80	S-406	PINE PRAIRIE BASE SLAB PLAN
81	S-501	STATELY OAKS GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS
82	S-502	STATELY OAKS ODOR CONTROL PAD PLAN AND DETAILS
83	S-503	STATELY OAKS ELECTRICAL PAD - PLAN, SECTION AND DETAILS

SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		Y - YARD PIPING
84	Y-101	CHESTNUT RIDGE LIFT STATION PROPOSED YARD PIPING PLAN
85	Y-102	CHESTNUT RIDGE LIFT STATION PROPOSED YARD PIPING PLAN
86	Y-201	STORM WATER POLLUTION PREVENTION PLAN LADBROOK DRIVE OVERALL LAYOUT
87	Y-202	LADBROOK DRIVE PLAN AND PROFILE STA 1+00 TO 4+50 STA 16+50 TO END
88	Y-203	LADBROOK DRIVE PLAN AND PROFILE STA 4+50 TO 10+50
89	Y-204	LADBROOK DRIVE PLAN AND PROFILE STA 10+50 TO 16+50
90	Y-205	STORM WATER POLLUTION PREVENTION PLAN DETAILS
91	Y-301	MAGNOLIA PARK LIFT STATION PROPOSED YARD PIPING PLAN
92	Y-302	MAGNOLIA PARK LIFT STATION PROPOSED 66" INFLUENT LINE
93	Y-401	PINE PRAIRIE LIFT STATION PROPOSED YARD PIPING PLAN
94	Y-402	PINE PRAIRIE LIFT STATION PROPOSED SANITARY SEWER
95	Y-501	STATELY OAKS LIFT STATION PROPOSED YARD PIPING PLAN
		D - CIVIL DRAINAGE
96	D-101	CHESTNUT RIDGE LIFT STATION PROPOSED GRADING PLAN
97	D-102	CHESTNUT RIDGE LIFT STATION PROPOSED STORM WATER POLLUTION PREVENTION PLAN AND DETAILS
98	D-301	MAGNOLIA PARK LIFT STATION PROPOSED GRADING PLAN
99	D-302	MAGNOLIA PARK LIFT STATION PROPOSED 18" STORM SEWER LINE
100	D-303	MAGNOLIA PARK LIFT STATION PROPOSED STORM WATER POLLUTION PREVENTION PLAN AND DETAILS
101	D-401	PINE PRAIRIE LIFT STATION PROPOSED GRADING PLAN
102	D-402	PINE PRAIRIE LIFT STATION PROPOSED STORM WATER POLLUTION PREVENTION PLAN AND DETAILS
103	D-501	STATELY OAKS LIFT STATION PROPOSED GRADING PLAN
104	D-502	STATELY OAKS LIFT STATION PROPOSED STORM WATER POLLUTION PREVENTION PLAN AND DETAILS
105	D-503	STORM WATER POLLUTION PREVENTION PLAN DETAILS

NO.	DATE	REVISION	APP.

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Craig Alexander Perry
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AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

INDEX OF DRAWINGS
SHEET 1 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-003

HORIZ: NONE
VERT: NONE

SHEET NO. 3 OF 225

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\003 G-003.dwg

SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		GE - GENERAL ELECTRIC
106	GE-001	ELECTRICAL LEGENDS & SYMBOLS SHEET 1 OF 2
107	GE-002	ELECTRICAL LEGENDS & SYMBOLS SHEET 2 OF 2
108	GE-003	ELECTRICAL LIGHTING FIXTURE SCHEDULE
109	GE-004	ELECTRICAL GENERAL NOTES
110	GE-005	ELECTRICAL YARD LIGHT/COMM. POLE DETAILS
111	GE-006	ELECTRICAL TYPICAL DETAILS
112	GE-007	ELECTRICAL RADAR LEVEL TRANSMITTER GAUGING SYSTEM INSTALLATION & DETAILS-I
113	GE-008	ELECTRICAL RADAR LEVEL TRANSMITTER GAUGING SYSTEM INSTALLATION & DETAILS-II
		GI - GENERAL INSTRUMENTATION
114	GI-001	INSTRUMENTATION LEGENDS & SYMBOLS-I
115	GI-002	INSTRUMENTATION LEGENDS & SYMBOLS-II
		E - ELECTRICAL
116	E-101	CHESTNUT RIDGE LIFT STATION DEMOLITION SITE PLAN
117	E-102	CHESTNUT RIDGE LIFT STATION PROPOSED SITE PLAN
118	E-103	CHESTNUT RIDGE LIFT STATION ONE-LINE DIAGRAM
119	E-104	CHESTNUT RIDGE LIFT STATION JUNCTION BOX DETAILS
120	E-105	CHESTNUT RIDGE LIFT STATION SERVICE POLE DETAIL
121	E-106	CHESTNUT RIDGE LIFT STATION CONTROL PANEL DETAIL
122	E-107	CHESTNUT RIDGE LIFT STATION CONDUIT SCHEDULE
123	E-108	CHESTNUT RIDGE LIFT STATION THREE-WIRE DIAGRAM
124	E-109	CHESTNUT RIDGE LIFT STATION SERVICE RACK DETAILS
125	E-110	CHESTNUT RIDGE LIFT STATION ENLARGED SITE PLAN
126	E-201	LADBROOK LIFT STATION DEMOLITION SITE PLAN
127	E-301	MAGNOLIA PARK LIFT STATION DEMOLITION SITE PLAN
128	E-302	MAGNOLIA PARK LIFT STATION PROPOSED SITE PLAN
129	E-303	MAGNOLIA PARK LIFT STATION ONE-LINE DIAGRAM
130	E-304	MAGNOLIA PARK LIFT STATION JUNCTION BOX DETAILS
131	E-305	MAGNOLIA PARK LIFT STATION SERVICE POLE DETAILS
132	E-306	MAGNOLIA PARK LIFT STATION CONTROL BUILDING PLAN
133	E-307	MAGNOLIA PARK LIFT STATION MCC ELEVATION
134	E-308	MAGNOLIA PARK LIFT STATION CONDUIT SCHEDULE
135	E-309	MAGNOLIA PARK LIFT STATION THREE-LINE DIAGRAM
136	E-310	MAGNOLIA PARK LIFT STATION MCC SCHEMATIC & WIRING DIAGRAM
137	E-311	MAGNOLIA PARK LIFT STATION ENLARGED PLAN VIEW
138	E-401	PINE PRAIRIE LIFT STATION DEMOLITION SITE PLAN
139	E-402	PINE PRAIRIE LIFT STATION PROPOSED SITE PLAN
140	E-403	PINE PRAIRIE LIFT STATION ONE-LINE DIAGRAM
141	E-404	PINE PRAIRIE LIFT STATION JUNCTION BOX DETAILS
142	E-405	PINE PRAIRIE LIFT STATION SERVICE POLE DETAIL
143	E-406	PINE PRAIRIE LIFT STATION CONTROL PANEL DETAIL
144	E-407	PINE PRAIRIE LIFT STATION CONDUIT SCHEDULE
145	E-408	PINE PRAIRIE LIFT STATION THREE-WIRE DIAGRAM
146	E-409	PINE PRAIRIE LIFT STATION SERVICE RACK DETAILS
147	E-410	PINE PRAIRIE LIFT STATION ENLARGED PLAN VIEW
148	E-501	STATELY OAKS LIFT STATION DEMOLITION SITE PLAN
149	E-502	STATELY OAKS LIFT STATION PROPOSED SITE PLAN
150	E-503	STATELY OAKS LIFT STATION ONE-LINE DIAGRAM
151	E-504	STATELY OAKS LIFT STATION JUNCTION BOX DETAIL
152	E-505	STATELY OAKS LIFT STATION SERVICE POLE DETAIL
153	E-506	STATELY OAKS LIFT STATION CONTROL PANEL DETAIL
154	E-507	STATELY OAKS LIFT STATION CONDUIT SCHEDULE
155	E-508	STATELY OAKS LIFT STATION THREE-WIRE DIAGRAM
156	E-509	STATELY OAKS LIFT STATION SERVICE RACK DETAILS
157	E-510	STATELY OAKS LIFT STATION ENLARGED PLAN VIEW

SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		I - INSTRUMENTATION
158	I-101	CHESTNUT RIDGE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-I
159	I-102	CHESTNUT RIDGE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II
160	I-103	CHESTNUT RIDGE LIFT STATION COMMUNICATIONS DIAGRAM
161	I-104	CHESTNUT RIDGE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT & SCHEDULE
162	I-105	CHESTNUT RIDGE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-I
163	I-106	CHESTNUT RIDGE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-II
164	I-107	CHESTNUT RIDGE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-III
165	I-108	CHESTNUT RIDGE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-I
166	I-109	CHESTNUT RIDGE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-II
167	I-110	CHESTNUT RIDGE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-III
168	I-111	CHESTNUT RIDGE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-IV
169	I-112	CHESTNUT RIDGE LIFT STATION PUMP NO.1 CONTROL WIRING DIAGRAM
170	I-113	CHESTNUT RIDGE LIFT STATION PUMP NO.2 CONTROL WIRING DIAGRAM
171	I-301	MAGNOLIA PARK LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-I
172	I-302	MAGNOLIA PARK LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II
173	I-303	MAGNOLIA PARK LIFT STATION COMMUNICATIONS DIAGRAM
174	I-304	MAGNOLIA PARK LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT & SCHEDULE
175	I-305	MAGNOLIA PARK LIFT STATION CONTROL CABINET BACK DOOR ELEVATION
176	I-306	MAGNOLIA PARK LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT
177	I-307	MAGNOLIA PARK LIFT STATION CONTROL WIRING DIAGRAM-I
178	I-308	MAGNOLIA PARK LIFT STATION CONTROL WIRING DIAGRAM-II
179	I-309	MAGNOLIA PARK LIFT STATION CONTROL WIRING DIAGRAM-III
180	I-310	MAGNOLIA PARK LIFT STATION PUMP NO.1 CONTROL WIRING DIAGRAM
181	I-311	MAGNOLIA PARK LIFT STATION PUMP NO.2 CONTROL WIRING DIAGRAM
182	I-312	MAGNOLIA PARK LIFT STATION PUMP NO.3 CONTROL WIRING DIAGRAM
183	I-313	MAGNOLIA PARK LIFT STATION PUMP NO.4 CONTROL WIRING DIAGRAM
184	I-314	MAGNOLIA PARK LIFT STATION PUMP NO.5 CONTROL WIRING DIAGRAM
185	I-315	MAGNOLIA PARK LIFT STATION PUMP NO.6 CONTROL WIRING DIAGRAM
186	I-401	PINE PRAIRIE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-I
187	I-402	PINE PRAIRIE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II
188	I-403	PINE PRAIRIE LIFT STATION COMMUNICATIONS DIAGRAM
189	I-404	PINE PRAIRIE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT & SCHEDULE
190	I-405	PINE PRAIRIE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-I
191	I-406	PINE PRAIRIE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-II
192	I-407	PINE PRAIRIE LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-III
193	I-408	PINE PRAIRIE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-I
194	I-409	PINE PRAIRIE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-II
195	I-410	PINE PRAIRIE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-III
196	I-411	PINE PRAIRIE LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-IV
197	I-412	PINE PRAIRIE LIFT STATION PUMP NO.1 CONTROL WIRING DIAGRAM
198	I-413	PINE PRAIRIE LIFT STATION PUMP NO.2 CONTROL WIRING DIAGRAM
199	I-414	PINE PRAIRIE LIFT STATION PUMP NO.3 CONTROL WIRING DIAGRAM
200	I-501	STATELY OAKS LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-I
201	I-502	STATELY OAKS LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II
202	I-503	STATELY OAKS LIFT STATION COMMUNICATIONS DIAGRAM
203	I-504	STATELY OAKS LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT & SCHEDULE
204	I-505	STATELY OAKS LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-I
205	I-506	STATELY OAKS LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-II
206	I-507	STATELY OAKS LIFT STATION CONTROL CABINET EQUIPMENT LAYOUT-III
207	I-508	STATELY OAKS LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-I
208	I-509	STATELY OAKS LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-II
209	I-510	STATELY OAKS LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-III
210	I-511	STATELY OAKS LIFT STATION CONTROL PANEL CONTROL WIRING DIAGRAM-IV
211	I-512	STATELY OAKS LIFT STATION PUMP NO.1 CONTROL WIRING DIAGRAM
212	I-513	STATELY OAKS LIFT STATION PUMP NO.2 CONTROL WIRING DIAGRAM
213	I-514	STATELY OAKS LIFT STATION PUMP NO.3 CONTROL WIRING DIAGRAM

SHEET NO.	DRAWING NO.	DRAWING SHEET TITLE
		TC - TRAFFIC CONTROL PLAN
214	TC-201	LADBROOK LIFT STATION TRAFFIC CONTROL PLAN OVERALL LAYOUT SHEET 1 OF 1
215	TC-202	LADBROOK LIFT STATION TRAFFIC CONTROL PLAN SHEET 1 OF 2
216	TC-203	LADBROOK LIFT STATION TRAFFIC CONTROL PLAN SHEET 2 OF 2
217	TC-204	LADBROOK LIFT STATION TCP NOTES, CHANNELIZING DEVICES, AND BARRICADES SHEET 1 OF 1
218	TC-301	MAGNOLIA PARK LIFT STATION DETOUR PLAN SHEET 1 OF 1
		SL - STREET LIGHT PLAN
219	SL-201	LADBROOK LIFT STATION STREET LIGHT OVERALL LAYOUT
220	SL-202	LADBROOK LIFT STATION STREET LIGHT GENERAL NOTES AND DETAILS
221	SL-203	LADBROOK LIFT STATION STREET LIGHT PLAN
		TP - TREE PROTECTION AND MITIGATION PLAN
222	TP-201	LADBROOK DRIVE STA 1+00 TO 9+00
223	TP-202	LADBROOK DRIVE STA 9+00 TO 14+00
224	TP-203	LADBROOK DRIVE STA 19+00 TO END
225	TP-204	LADBROOK DRIVE TREE TREATMENT SPECIFICATIONS AND DETAILS

NO.	DATE	REVISION	APP.

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GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Craig Alexander Perry
Engineer
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

INDEX OF DRAWINGS
SHEET 2 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-004

HORIZ: NONE
VERT: NONE

SHEET NO. 4 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\004 G-004.dwg

GENERAL CONSTRUCTION NOTES

1. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING FACILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED AT CONTRACTOR'S EXPENSE.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING PUBLIC AND PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATER, WASTEWATER, STORM WATER LINES, TRAFFIC CONTROL DEVICES, PETROLEUM, OIL AND GAS PIPELINES, TELEPHONE, COMMUNICATIONS, FIBER OPTIC AND OTHERS DURING CONSTRUCTION. UTILITIES DAMAGED BY CONTRACTOR SHALL BE REPAIRED TO PRE-DAMAGED CONDITION OR BETTER, IN ACCORDANCE WITH THE UTILITY OWNER'S STANDARDS AT NO ADDITIONAL COST.

3. REMOVE EXISTING PLUGS AND CONNECT PROPOSED UTILITY LINES AS INDICATED ON PLANS.

4. UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATIONS SHOWN ON THE DRAWING. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CONTRACTOR SHALL NOTIFY 'TEXAS 811' AT 811 OR 1-800-344-8377 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING IN THE VICINITY OF UNDERGROUND UTILITIES.

5. CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION. COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND ALL REGULATIONS OF UTILITY COMPANIES CONCERNING SAFETY AND HEALTH PRACTICES.

6. WHEN TRENCH CONDITION WARRANTS USE OF DEWATERING SYSTEMS, THEIR USE SHALL BE REQUESTED BY CONTRACTOR AND APPROVED BY OWNER. CONTRACTOR TO DEWATER GROUND TO A POINT WHERE GROUNDWATER IS MAINTAINED 3 FEET BELOW THE TRENCH BOTTOM. SILT CAPTURE BAGS ARE REQUIRED ON THE DISCHARGE OF ALL DEWATERING PIPES. WATER DISPOSAL SHALL BE ROUTED TOWARDS AND APPROPRIATE DRAINAGE FACILITY.

7. THESE PLANS DO NOT EXTEND OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THESE PLANS. CONTRACTOR SHALL INDEPENDENTLY PREPARE AND/OBTAIN THE APPROPRIATE SAFETY SYSTEMS.
8. REMOVE ALL EXCESS MATERIAL FROM THE SITE AND RESTORE GROUND TO ORIGINAL CONTOURS.

GENERAL NOTES - INSIDE CITY OF HOUSTON AND EXTRATERRITORIAL JURISDICTION LIMITS

1. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING PUBLISHED BY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES, TRAFFIC CONTROL DEVICES AND OTHER UTILITIES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING, REFERENCED ABOVE.

3. THE SIZES OF WATER METERS SHOWN BUT NOT SPECIFICALLY CALLED OUT IN THIS PROJECT ARE ONE INCH OR SMALLER STANDARD CITY OF HOUSTON WATER METERS. ALL OTHER SIZES LARGER THAN ONE INCH ARE SPECIFICALLY CALLED OUT ON THESE DRAWINGS.

4. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, HOUSTON PUBLIC WORKS AND ENGINEERING @ 832-394-9098 AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.

5. CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY OF HOUSTON PARKS AND RECREATION DEPARTMENT @ 832-394-8805 AND 832-394-8804 AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION, IN ORDER FOR CITY TO SUSPEND OR RESCHEDULE MOWING OPERATION IN THE MEDIAN OF THE CONSTRUCTION ZONE AREA.

6. CITY OF HOUSTON STANDARD DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING ARE INCORPORATED IN PLANS BY REFERENCE AS IF COPIED VERBATIM. STANDARD DETAILS ARE AVAILABLE FOR DOWNLOAD AT THE FOLLOWING WEB ADDRESS: HTTPS://EDOCS.PUBLICWORKS.HOUSTONTX.GOV/ENGINEERING-AND-CONSTRUCTION/DRAWINGS/STANDARD-DETAILS.HTML. DETAILS INCLUDED IN PLAN SET SUPERSEDE RELATED COH STANDARD DETAILS

CITY OF HOUSTON PUBLIC WORKS
SWPPP CONSTRUCTION NOTES

1. CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM.

2. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.

3. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FORM THE EXCAVATED AREA.

4. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

   - DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
   - AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
   - STRUCTURAL CONTROL MEASURES.
   - LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

CODES AND SPECIFICATIONS

1. DESIGN IS IN ACCORDANCE WITH 2018 INTERNATIONAL BUILDING CODE, HARRIS COUNTY AMENDMENTS.

2. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH APPLICABLE OSHA, STATE, AND LOCAL REGULATIONS. THIS DESIGN IS NOT INTENDED TO CONFLICT WITH SAFETY OR APPLICABLE REGULATIONS OR TO RELIEVE THE CONTRACTOR OF COMPLIANCE WITH THESE REQUIREMENTS.

3. DEAD LOADS
   A. ACTUAL TRIBUTORY STRUCTURE WEIGHT
   B. SUPERIMPOSED DEAD LOADS: 10 PSF

4. LIVE LOADS
   A. PILE CAP: 250 PSF
   B. GRATING: 100 PSF
   C. DRIVEWAY: HS-20 TRUCK LOAD
   D. RETAINING WALL SURCHARGE: 250 PSF

5. GROUND SNOW LOAD: Pg = 0 PSF

NO.	DATE	REVISION	APP.

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GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Crag Alexander Perry
Printed
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

GENERAL CONSTRUCTION NOTES SHEET 1 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-005

HORIZ: NONE
VERT: NONE

SHEET NO. 5 OF 225

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\005 G-005.dwg

CENTERPOINT ENERGY
CAUTION: UNDERGROUND GAS FACILITIES

1. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

2. WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 207-5463 OR (713) 945-8037 (7:00 AM TO 4:30PM) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.

3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.

4. WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.

5. FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-2111 OR (713) 207-4200.

6. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGOUND FACILITIES.
WARNING: OVERHEAD ELECTRICAL FACILITIES

7. OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION.

8. TEXAS HEALTH AND SAFETY CODE, CHAPTER 752 STATES IT IS ILLEGAL FOR A PERSON TO PERFORM ANY WORK OR ERECT ANY STRUCTURE UNDER CIRCUMSTANCES IN WHICH IT IS POSSIBLE FOR A PERSON, EQUIPMENT OR ANY OBJECT A PERSON IS HOLDING TO COME WITHIN SIX FEET OF HIGH-VOLTAGE OVERHEAD ELECTRIC LINES.

9. IN ADDITION, THE U.S. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) REGULATIONS STATE A WORKER OR ANY PART OF A CONDUCTIVE MATERIAL, TOOL, PIECE OF EQUIPMENT OR MACHINE MUST NOT COME WITHIN 10 FEET OF AN ENERGIZED LINE 50,000 VOLTS AND BELOW.

10. IF YOUR WORK WILL BE WITHIN 10 FEET OF POWER LINES, YOU MUST CONTACT CENTERPOINT ENERGY AT LEAST 48 HOURS BEFORE BEGINNING.

11. WORK MUST NOT START UNTIL ALL PARTIES RESPONSIBLE FOR THE WORK AND THE UTILITIES HAVE NEGOTIATED A SATISFACTORY MUTUAL ARRANGEMENT TO PROVIDE TEMPORARY DE-ENERGIZATION AND GROUNDING, TEMPORARY RELOCATION OR RAISING OF THE LINE, OR TEMPORARY MECHANICAL BARRIERS TO SEPARATE AND PREVENT CONTACT BETWEEN THE LINE AND THE MATERIAL OR EQUIPMENT OR THE PERSON PERFORMING THE WORK, ACTIVITY OR FUNCTION.

12. PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS AND SUBCONTRACTORS, ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT (713) 207-2222.
ACTIVITIES ON OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY:

13. NO APPROVAL TO USE, CROSS OR OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN. IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING AND RIGHT OF WAY DIVISION AT (713) 207-6348 OR (713) 207-5769.

AT&T TEXAS/SWBT FACILITIES

1. THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.

2. THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.

3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.

4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.

5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.

6. PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER KEVIN RAY AT (713) 614-1983 OR E-MAIL HIM AT KR7896@ATT.COM IF CABLE LOCATE REQUESTS ARE NOT COMPLETED FOR OUR AT&T TEXAS/SWBT FACILITIES.

NO.	DATE	REVISION	APP.

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NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T TEXAS/SWBT underground conduit facilities only. Signature valid for one year.

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Crag Alexander Perry
Printed
116345
Texas License
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

GENERAL
CONSTRUCTION
NOTES
SHEET 2 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-006

HORIZ: NONE
VERT: NONE

SHEET NO. 6 OF 225

DRAWING SCALE

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DRAWING NUMBERING SYSTEM

G - 101
- SHEET SEQUENTIAL NUMBERS
- LIFT STATION DRAWING PREFIX CODES DESIGNATORS
- DRAWING DISCIPLINE DESIGNATORS

DRAWING DISCIPLINE DESIGNATORS

G - GENERAL
F - FIRMETTE
C - CIVIL
SV - SURVEY
S - STRUCTURAL
Y - YARD PIPING
D - CIVIL DRAINAGE
GE - GENERAL ELECTRIC
GI - GENERAL INSTRUMENTATION
E - ELECTRICAL
I - INSTRUMENTATION
TC - TRAFFIC CONTROL PLAN
SL - STREET LIGHT PLAN
TP - TREE PROTECTION AND MITIGATION PLAN

LIFT STATION DRAWING PREFIX CODES DESIGNATORS

1 - CHESTNUT RIDGE LIFT STATION
2 - LADBROOK LIFT STATION
3 - MAGNOLIA PARK LIFT STATION
4 - PINE PRAIRIE LIFT STATION
5 - STATELY OAKS LIFT STATION

FILL PATTERNS

- EARTH OR GRADE
- BEDROCK
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- SAND
- CONCRETE
- ENGINEERED FILL
- RIPRAP
- STONE
- BRICK
- CMU
- FACE BLOCK
- CHECKERED PLATE
- GRATE
- STEEL
- ALUMINUM
- DEMOLITION
- FLOWABLE FILL

GENERAL SYMBOLOGY

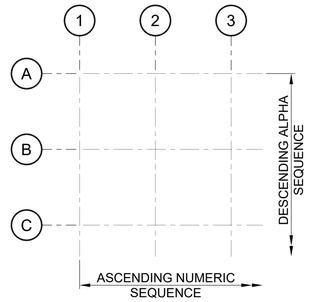
ELEVATION CALLOUTS

TOC 58.33 — **FLOOR ELEVATION** (PLAN VIEWS)

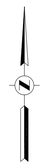
TOC EL. 58.33 — **SPOT ELEVATION** (SECTIONS AND ELEVATIONS)

GRID/COLUMN CALLOUTS

TYPICAL GRID/COLUMN LAYOUT



NORTH ARROW



PROJECT NORTH ARROW
(TRUE NORTH)

BREAKS

PLAN, ELEVATION, AND SECTION BREAKS

PIPE BREAK

LINE STYLES

- EXISTING FACILITY
- NEW FACILITY
- OTHER DISCIPLINE NEW FACILITY BACKGROUND
- GRID LINE OR CENTERLINE
- MATCH LINE
- EXAMPLE BOUNDARY LINE
- SITE FENCING

ANNOTATION

SHEET NOTES

- 01 — **SHEET KEYNOTE**
- 2 — **REFERENCE KEYNOTE** (KEYNOTE LIST)
- FLOW 96" — **FLOW ARROW AND PIPE SIZE**
- S-101 — **SITE CONTROL POINTS**
- FIT 01-10 — **PIPE FITTING LABEL NUMBER**
- CAV-01-10 — **VALVE LABEL NUMBER**

REVISIONS

- 1 — **REVISION DELTA**
- **REVISION CLOUD**

SCALE BARS

8' 0 8' 16' 24' — 3/32"=1'-0"

4' 0 4' 8' 12' — 3/16"=1'-0"

8' 0 8' 16' — 1/8"=1'-0"

4' 0 4' 8' — 1/4"=1'-0"

4' 0 4' — 3/8"=1'-0

1' 0 1' 2' 5' — 1/2"=1'-0"

1' 6" 0 1' 2' — 1"=1'-0"

0 10' 20' — 1"=10'

0 10' 20' 40' — 1"=20'

0 10' 20' 30' 60' — 1"=30'

0 50' 100' — 1"=50'

0 20' 40' 60' 120' — 1"=60'

0 50' 100' 200' — 1"=100'

0 75' 150' 300' — 1"=150'

GENERAL ABBREVIATIONS

ABAND	ABANDONED
AB	ANCHOR BOLT
ABV	ABOVE
ADJ	ADJUSTABLE
ADMIN	ADMINISTRATION
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISH FLOOR
AH	ACCESS HATCH
ALUM	ALUMINUM
ANOD	ANODIZED
APPROX	APPROXIMATE
AR	ANCHOR
AS	AIR SUPPLY
ATS	AUTOMATIC TEMPERATURE SENSOR
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
AWL	AVERAGE WATER LEVEL
BO	BOARD
BEL	BELOW
BF	BOTTOM FACE
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BLK	BLOCK (ING)
BM	BEAM
BOF	BOTTOM OF FOOTING
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BOW	BOTTOM OF WALL
C	CHANNEL (STRUCTURAL)
CAP	CAPACITY
CCP	CHEMICAL CARRIER PIPE
CER	CERAMIC
CF	CUBIC FEET
CI	CAST IRON
CIRC	CIRCUMFERENTIAL
CJ	CONSTRUCTION JOINT
CL (C.L.)	CENTER LINE+
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CMU	CONCRETE MASONRY UNIT
CO (C.O.)	CLEAN-OUT
COH	CITY OF HOUSTON
COL	COLUMN
COMB	COMBINATION
COMP	COMPRESSIBLE
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
COR	CORNER (S)
CORR	CORRUGATED
CR	CHESTNUT RIDGE LIFT STATION
C TO C	CENTER TO CENTER
CT	CERAMIC TILE
CTG	COATING
CTJ	CONTROL JOINT
CTR	CENTER (ED)
CTSK	COUNTERSINK
CY	CUBIC YARD
D	DEEP
DAP	DAMPER
DCFM	DECANT FORCEMAIN
DEC	DECANT
DET	DETAIL
DF	DIFFUSER
DH	DEHUMIDIFIER
DI	DIGITAL INPUT OR DUCTILE IRON AS APPLICABLE
DIA	DIAMETER
DIM	DIMENSION
DIR	DIRECTION
DIV	DIVISION
DJ	DISMANTLING JOINT
DL	DEAD LOAD
DM	DENSITY METER
DN	DOWN
DO	DIGITAL OUTPUT
DRV	DRAIN VALVE
DWG	DRAWING
E	EAST
EA	EACH
EB	EXPANSION BOLT
ED	EQUIPMENT DRAIN
EF	EACH FACE OR EXHAUST FAN
EJ	EXPANSION JOINT
EL, ELEV	ELEVATION
ELEC	ELECTRIC (AL)
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ES	ELECTRICAL SUPPLY
ESEW	EMERGENCY SHOWER AND EYE WASH
ESMT	EASEMENT
ESS	EMERGENCY STOP SWITCH
EST	ESTIMATE
ETC	ETCETERA
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	FAN
FAB	FABRICATE (ED)
FC	FLOW CONTROLLER OR FAIL CLOSED
FAC	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FF	FINISHED FLOOR
FE	FLOW ELEMENT
FIN	FINISH (ED)
FL	FLOW LINE OR FLOOD LIGHT, AS APPLICABLE
FLP	FAIL LAST POSITION
FLR	FLOOR
FLASH	FLASHING
FLG	FLANGE
FLX	FLEXIBLE
FM	FORCE MAIN
FND	FOUNDATION
FRP	FIBER REINFORCED PLASTIC OR FIBERGLASS REINFORCED
FT	FLOW TRANSMITTER OF FOOT/FEET
FTG	FOOTING
FUM	FUME HOOD
GA	GAGE
GALV	GALVANIZED
GB	GRADE BREAK
GLV	GALVANIZED
GI	GALVANIZED IRON
GOX	GASEOUS OXYGEN
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRADE
GRTG	GRATING
GST	GROUND STORAGE TANK
GVL	GRAVEL
GYP BD	GYPSUM BOARD
HB	HOSE BIB
HCO	HYDRAULIC CYLINDER OPERATOR
HD	HYDRAULIC DRIVE UNIT
HDR	HEADER
HI	HIGH
HOR	HORIZONTAL
HP (H.P.)	HORSE POWER OR HIGH POINT OF FLOOR/SLAB/PAVEMENT OR HIGH PRESSURE, AS APPLICABLE
HR	HANDRAIL OR HOUR
HT	HEIGHT
HTI	HEAT TRACED AND INSULATED
HVAC	HEATING/VENTILATION/AIR CONDITIONING
HWT	HOT WATER HEATER
I	INSULATED
I/O	INPUT/OUTPUT
IAS	INSTRUMENT AIR SUPPLY
IAW	IN ACCORDANCE WITH
ID	INSIDE DIAMETER
IJ	ISOLATION JOINT
INS	INSIDE
INSUL	INSULATION
INT	INTERIOR
ITC	INSTRUMENTATION TERMINAL CABINET
ITP	INSTRUMENTATION PANEL
INV	INVERT
JT	JOINT
KO	KNOCKOUT
LB	LADBROOK LIFT STATION
LCP	LOCAL CONTROL PANEL
LF	LINEAR FEET
LI	LEVEL INSTRUMENT
LIT	LEVEL INDICATING TRANSMITTER
LL	LIVE LOAD
LO	LOW
LOC	LOCATION/LOCATED
LONG	LONGITUDINAL
LOU	LOUVER
LP	LOW POINT OR LOW POINT OF FLOOR/SLAB/PAVEMENT
LS	LEVEL SWITCH
LT	LEVEL TRANSMITTER OR LEFT, AS APPLICABLE
LWL	LOW LEVEL SWITCH
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH (M.H.)	MANHOLE
MIJ	MONOLITHIC ISOLATION JOINT
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MNL	MANUAL
MO	MASONRY OPENING
MONU.	MONUMENT
MP	MAGNOLIA PARK LIFT STATION
MTL	METAL
MWSE	MAXIMUM WATER SURFACE ELEVATION
N	NORTH
NAVD	NORTH AMERICAN VERTICAL DATUM
NFBWA	NORTH FORT BEND WATER AUTHORITY
NHCRWA	NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY
NG (N.G.)	NATURAL GRADE OR NATURAL GROUND
NGE	NATURAL GROUND ELEVATION
NIC	NOT IN CONTRACT
NMS	NORTHEAST METER STATION
NPW	NON POTABLE WATER
NTS	NOT TO SCALE
O/A	OFF AUTO
OC	ON CENTER
OD	OUTSIDE DIAMETER
OO	OFF-ON
OHP	OVERHEAD POWER
OPNG	OPENING
OPT	OPTIONAL
ORP	OXIDATION REDUCTION POTENTIAL
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PC (P.C.)	POINT OF CURVATURE
PCC	PORTLAND CEMENT CONCRETE
PCF	POUNDS PER CUBIC FOOT
PCV	PRESSURE CONTROL VALVE
PG	PAGE
PH	PHOSPHATE
PI	PRESSURE INDICATOR
PL	PROPERTY LINE
POLY	POLYTUBING
PP	PINE PRAIRIE LIFT STATION
PR	POWER POLE
PRV	PRESSURE RELIEF VALVE
PR	PRESSATE RETURN
PSI	POUNDS PER SQUARE INCH
PSW	PLANT SERVICE WATE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
R	RISER
RAD, R.	RADIUS
RCB	REINFORCED CONCRETE BOX
RC	REINFORCED CONCRETE
RCL	REMOTE I/O COMMUNICATION LINK
RCP	REINFORCED CONCRETE PIPE
RECPT	RECEPTACLE
RED	REDUCER
REF	REFERENCE/REFER
REINF	REINFORCING
REM	REMOVE
REQD	REQUIRED
REV	REVISION
RIO	REMOTE INPUT/OUPUT
RM	ROOM
RND	ROUND
ROW	RIGHT OF WAY
RP	RADIO PANEL
RPM	ROTATIONS PER MINUTE
ROT	REMOTE OFF TEST
RT	RIGHT
SCHD	SCHEDULE
SEC	SECTION
SEJ	SLAB EXPANSION
SF	SQUARE FOOT
SHT	SHEET
SO	STATELY OAKS LIFT STATION
SPEC	SPECIFICATION
SPECD	SPECIFIED
SQ	SQUARE
SRV	SERVICE
SS (S.S.)	STAINLESS STEEL OR SIDE SLOPE, AS APPLICABLE
ST	STREET
STA	STATION
STD	STANDARD OR STANDARD PROTOR DENSITY, AS APPLICABLE
STL	STEEL
SWSP	SURFACE WATER SUPPLY PROJECT
TCEQ	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
TEMP	TEMPERATURE
TDH	TOTAL DYNAMIC HEAD
THK	THICK (NESS)
TOC	TOP OF CONCRETE/TOTAL ORGANIC
TOP	TOP OF PIPE
TOS	TOP OF SLAB
TOW	TOP OF WALL
TU	TURBIDITY
TYP	TYPICAL
UH	UNIT HEATER
UN	UNION
UPS	UNINTERRUPED POWER SUPPLY
V	VOLT
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
W/	WITH
W/O	WITHOUT
WHCRWA	WEST HARRIS COUNTY REGIONAL WATER AUTHORITY
WS	WATER SUPPLY
WSE	WATER SURFACE ELEVATION
WSTP	WATERSTOP

NO.	DATE	REVISION	APP.

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GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:

Craig Alexander Perry
Engineer
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

ABBREVIATIONS
LEGEND
AND
SYMBOLOGY

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-007

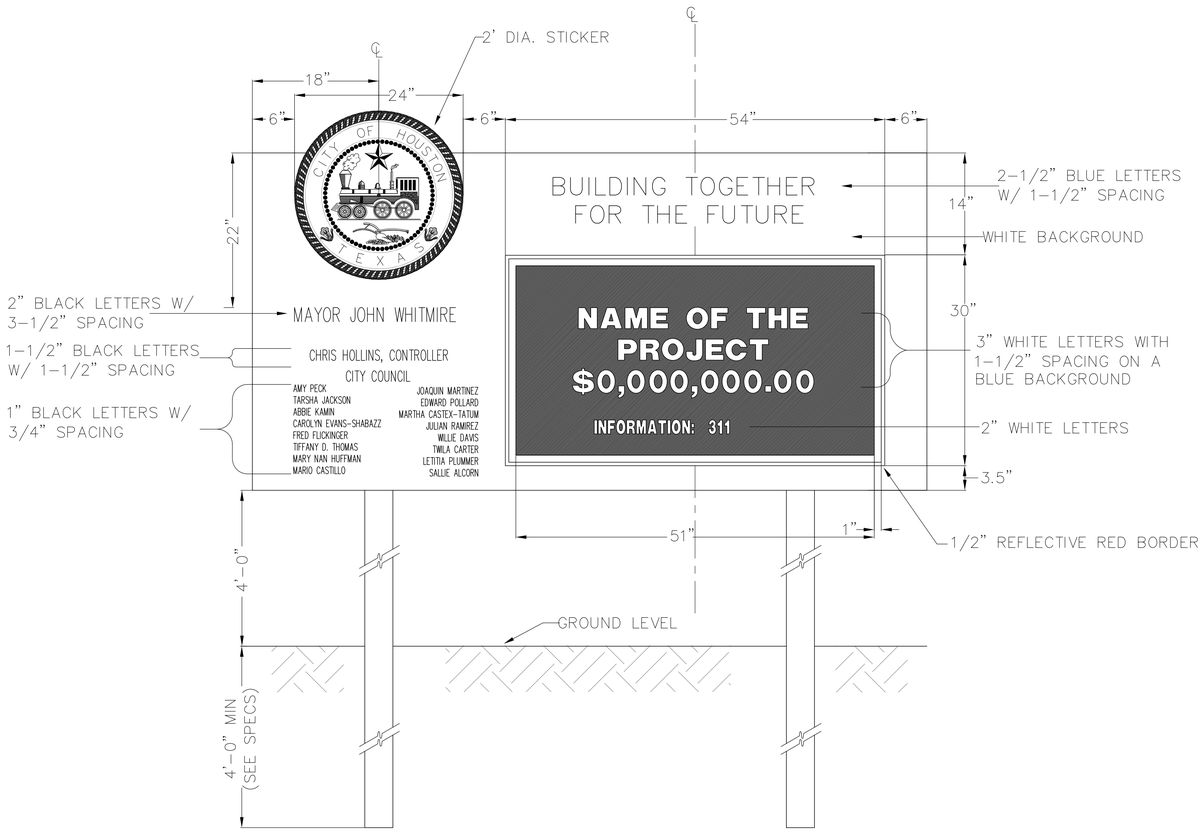
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VERT: NONE

SHEET NO. 7 OF 225

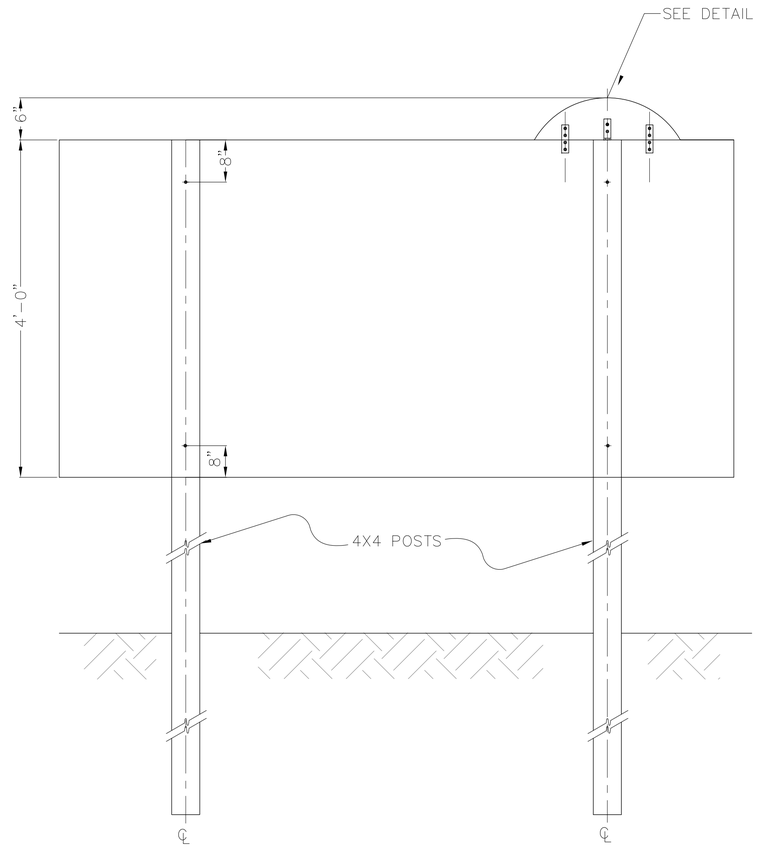
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FOR CITY OF HOUSTON USE ONLY

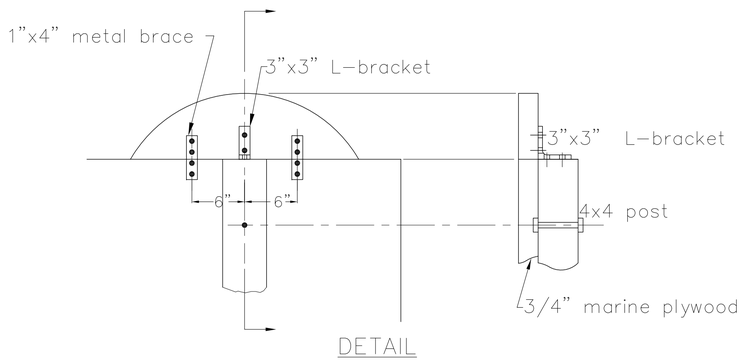
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FRONT VIEW



BACK VIEW



DETAIL

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
CONSTRUCTION SIGN (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JAN-01-2011	DWG NO: 01580-03

NOTES:

1. IN ACCORDANCE WITH CHAPTER 46 HOUSTON SIGN CODE SECTION 4605-SIGN PERMITS AND FEES EXCEPTIONS. NO PERMIT SHALL BE REQUIRED UNDER THIS CHAPTER FOR ON-PREMISES SIGNS OF THE FOLLOWING DESCRIPTION. A SIGN NOT OVER 40 SQUARE FEET IN AREA SETTING FORTH INFORMATION CONCERNING A BUILDING OR OTHER STRUCTURE UNDER REPAIR OR CONSTRUCTION OR ADVERTISING THE SALE OR RENTAL OF THE PREMISES.
3. SIGNS TO BE INSTALLED AT LOCATIONS AS DIRECTED BY ENGINEER.
4. CONTRACTOR TO PROVIDE ONE SIGN AT EACH LOCATION LIFT STATION SITE LISTED IN NOTE 5.
5. CHESTNUT RIDGE LIFT STATION
   LADBROOK LIFT STATION
   MAGNOLIA PARK LIFT STATION
   PINE PRAIRIE LIFT STATION
   STATELY OAKS LIFT STATION

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:42 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Crag Alexander Perry
Registered
116345
License No.
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

CONSTRUCTION SIGN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. G-008	HORIZ: NONE VERT: NONE
SHEET NO. 8 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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1. PAVING

(FOR H.C. PUBLIC R.O.W. ONLY)

	DESIGN THICKNESS OF PAVING	STABILIZED SUBGRADE DEPTH	DESIGN STRENGTH OF CONCRETE	STEEL SPACING		REINFORCE STEEL SIZE
				LONG.	TRANS.	
CONCRETE	(IN.)	(IN.)	(PSI)	(IN.)	(IN.)	(#4 MIN.)

	DESIGN SURFACE COURSE THICKNESS	DESIGN SURFACE COURSE TYPE	DESIGN BASE COURSE THICKNESS	DESIGN BASE COURSE TYPE	STABILIZED SUBGRADE THICKNESS	STABILIZED SUBGRADE TYPE
ASPHALT	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)

DRIVEWAYS (in H.C. ROW only)

I. NUMBER OF DRIVEWAY APPROACHES PROPOSED INCLUDE WIDENING OR REPAVING EXISTING DRIVEWAYS AS WELL AS NEW DRIVEWAYS

DRWY	WIDTH	MATERIAL	CULVERT?	CULVERT LENGTH	NEAREST X-STREET	DIST. TO X-STREET
1						
2						
3						
4						
5						

II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET ____

FIRE APPARATUS ACCESS ROAD

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED DUE TO _____

CURBING

I. ISLANDS, MEDIANS AND ALL AREAS NOT TAKING DIRECT DRIVEWAY ACCESS REQUIRES STANDARD 6" CURBING

II. ☐ STANDARD 6" CURBING PROPOSED
☐ 4" x 12" CURBING PROPOSED EXCEPT AT MEDIANS AND ISLANDS

TRAFFIC CONSIDERATIONS

I. MEDIAN CUTS
☐ NO MEDIAN CUT OR RELOCATION IS PROPOSED
☐ MEDIAN MODIFICATIONS ARE SHOWN ON SHEET _____

II. LEFT / RIGHT TURN LANE
☐ NO LEFT / RIGHT TURN LANE IS PROPOSED
☐ LEFT / RIGHT TURN LANE IS SHOWN ON SHEET _____

III. TRAFFIC CONTROL PLAN
☐ NO WORK IN THE RIGHT OF WAY IS PROPOSED THAT WOULD INTERFERE WITH TRAFFIC FLOW
☐ TRAFFIC CONTROL SHOWN ON SHEET _____

IV. TRAFFIC SIGNAL
☐ NO TRAFFIC SIGNAL IS EXISTING / PROPOSED
☐ EXISTING TRAFFIC SIGNAL DEVICES (T.C. BOXES AND LOOPS) SHOWN ON SHEET _____
☐ PROPOSED TRAFFIC SIGNAL (BY OTHERS)

V. TRAFFIC IMPACT ANALYSIS
☐ NO TRAFFIC IMPACT ANALYSIS IS REQUIRED
☐ TRAFFIC IMPACT ANALYSIS HAS BEEN APPROVED ON DATE:_____
PLAN TITLE: _____
HCPID PROJECT NO.: _____

5. DESCRIPTION OF PROPERTY

I. LEGAL DESCRIPTION
A. ACREAGE: _____
B. ☐ SUBDIVISION: _____
☐ SURVEY & ABSTRACT: _____
C. ADJACENT ROADS: _____

II. PLATTING
A. SUBDIVISION PLAT
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT
PLAT NAME: _____
B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

III. JURISDICTIONS
☐ CITY OF_____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF_____
☐ NO ETJ

IV. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE _____

V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.)
☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

NOTE: ALL APPROVED, FINAL PLATS AND ASSOCIATED CPC101 FORMS MUST BE INCLUDED WITH PLAN SUBMITTAL.

☐ CONFORMING SUBDIVISION
☐ NON-CONFORMING SUBDIVISION
☐ PARTIALLY NON-CONFORMING SUBDIVISION

2. RESIDENTIAL / SUBDIVISION DRAINAGE

I. PROPOSED DRAINAGE SYSTEM TYPE
☐ STORM SEWER
☐ ROADSIDE DITCH
☐ LOW IMPACT DEVELOPMENT (LID)

II. DESIGN METHOD USED
☐ CITY OF HOUSTON _____ YEAR FREQUENCY
☐ OTHER: _____

III. DRAINAGE SYSTEM OUTFALLS DIRECTLY TO EXISTING
☐ DETENTION POND (APPROVED H.C. PRJ NO.): _____
DETENTION POND MAINTAINED BY: _____
☐ HCFCD DRAINAGE DITCH UNIT NO.: _____
☐ H.C. ROADSIDE DITCH (ROAD NAME): _____
☐ H.C. STORM SEWER (APPROVED H.C. PRJ NO.): _____

IV. H.C. OUTFALL CALCULATIONS
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

V. DETENTION PROVIDED BY
☐ DETENTION BASIN IS PART THIS PLAN SET. SERVICE AREA MAP IS ON SHEET ___
☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

PROPOSED STORM SEWER IS SUBMERGED (AGREEMENT MUST BE PROVIDED).
STATIC W.S.E. @ OUTFALL IS _____.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = _____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

6. STORMWATER QUALITY

I. SWPPP: CONSTRUCTION MEASURES. (Complete for ALL projects)
☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S)_____
☐ DISTURBS <1AC. N/A

II. APPLICABILITY FOR PERMANENT FEATURES. (must be completed on all projects)
EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES (must be verified with plat)
EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A, Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)
EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)
GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT NO. _____ & SWQ PERMIT NO. _____
STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN ON SHEET(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)
☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY)
DETAILS AND CALCULATIONS APPEAR ON SHEET(S)_____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

3. COMMERCIAL / OTHER SITE DRAINAGE

I. PROPOSED DRAINAGE AREA
☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (NET NEW DEVELOPED AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)

II. DETENTION VOLUME
NEW AREA_____X_*_=_____ACRE FEET
DETENTION REQUIRED
*☐ .65 (CHANNEL)
*☐ .75 (STM SWR)
*☐ 1.00 (RD. DITCH)
*☐ OTHER: _____
PROPOSED DETENTION VOLUME = _____ ACRE FEET
PROPOSED DETENTION VOLUME CALCULATIONS ARE SHOWN ON SHEET _____
DETENTION VOLUME PROVIDED BY EXISTING DETENTION POND
APPROVED H.C. PROJECT NO.: _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET ____

III. OUTFALL
OUTFALL TO ☐ H.C. ROADSIDE DITCH
☐ EXISTING H.C. STORM SEWER
☐ OTHER _____
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.:: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

IV. PUMPED DETENTION FACILITIES
VOLUME THAT GRAVITY FLOWS:_____ACRE FEET
VOLUME THAT IS PUMPED:_____ACRE FEET
ENTRANCE VELOCITY INTO ROADSIDE DITCH OR STORM SEWER: _____
PUMP SPECIFICATIONS AND AUTOMATIC SHUTOFF PLAN FOR ROADSIDE DITCH & STORM SEWER OUTFALLS APPEAR ON SHEET _____

V. FLOW RESTRICTOR SIZE
OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____

NOTE: ALL ROADSIDE DITCH OUTFALLS REQUIRE EROSION CONTROL MEASURES. RIPRAP IS NOT ALLOWED AS AN EROSION CONTROL MEASURE IN HARRIS COUNTY ROW. ALL PUMPED DETENTION OUTFALLS TO ROADSIDE DITCHES REQUIRE MANHOLE W/ LEADS.

7. FLOOD PLAIN STATUS

I. GENERAL INFORMATION
FIRM PANEL NUMBER FOR PROJECT: _____
FIRM PANEL EFFECTIVE DATE: _____
STATUS OF PROPERTY ON MAP:
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN A ____ ZONE OR SHADED ZONE "X",
(SEE FLOODPLAIN BOUNDARY NOTATION ON SURVEY LAYOUT PG. NO. _____) (1% ANNUAL FLOOD LEVEL_____)
(0.2% BASE FLOOD LEVEL_____)
☐ REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA
CASE NO._____ ☐ PROPOSED FLOODPLAIN IS SHOWN ON SHEET_____
ELEVATION INFORMATION BENCHMARK USED
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION
☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FLOODPLAIN AS DELINEATED BY FIRM PANEL).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

IV. ☐LOMR REQUIRED ☐CLOMR REQUIRED VERIFIED BY: _____

8. CURB RAMPS

A. ARE CURB RAMPS THAT CONNECT TO PUBLIC STREETS PROPOSED IN THIS SET OF PLANS? ☐ YES ☐ NO

9. LANDSCAPING

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

4. WATER AND WASTEWATER

I. COMMERCIAL PROJECTS

DOES PROPERTY HAVE EXISTING AND/OR PROPOSED UTILITIES?
☐ YES ☐ NO

IF YES, CHECK THE BOX THAT APPLIES TO THIS PROJECT
☐ PUBLIC WATER & SANITARY
☐ PRIVATE WATER WELL & SEPTIC SYSTEM
☐ PUBLIC WATER & PRIVATE SEPTIC SYSTEM
☐ PRIVATE WATER WELL & PUBLIC SANITARY

NOTE: PUBLIC UTILITIES REQUIRE A LETTER FROM THE DISTRICT/ MUNICIPALITY AUTHORIZING SERVICE & CONNECTION. THIS IS REQUIRED FOR PLAN APPROVAL.

UTILITY DISTRICT/MUNICIPALITY NAME: _____

NOTE: SEPTIC SYSTEMS REQUIRE H.C. WASTE WATER REVIEW

H.C. SEPTIC PERMIT/REQUEST NO. _____

NOTE: ALL EXISTING AND PROPOSED UTILITIES MUST BE ACCURATELY SHOWN & LABELED ON THE SITE PLANS.

II. SUBDIVISION PROJECTS

☐ UTILITY DISTRICT/MUNICIPALITY NAME: _____
☐ PRIVATE WATER & WASTE WATER SYSTEMS
☐ PRIVATE WATER & INDIVIDUAL OSSF
☐ INDIVIDUAL WATER WELL & OSSF

NOTE: A COPY OF TCEQ APPROVAL FOR PRIVATE WATER & WASTE WATER SYSTEMS IS REQUIRED FOR PLAN APPROVAL

*NOTE: DEDICATED UNDERGROUND FIRE LINES MUST BE SUBMITTED TO THE HARRIS COUNTY FIRE PROTECTION GROUP FOR REVIEW AND PERMITTING BY THE UNDERGROUND FIRE LINE CONTRACTOR. CIVIL REITEW DOES **NOT** REVIEW OR APPROVE UNDERGROUND FIRE LINES FOR THE FIRE PROTECTION SYSTEMS.*

WASTEWATER TREATMENT PLANTS

H.C. WWTP REVIEW:

IS THE PROPOSED PROJECT A NEW WWTP SITE OR A REHAB/EXPANSION OF AN EXISTING WWTP SITE? *YES* ☐ *NO* ☐

IF YES, IS A HARRIS COUNTY DOMESTIC WASTEWATER TREATMENT PLANT EXPRES REVIEW SHEET ATTACHED AND COMPLETED ACCORDING TO INSTRUCTIONS? *YES* ☐ *NO* ☐

REFER TO:
WWW.ENG.HCTX.NET/PERMITS/WASTEWATER/REGULATIONS-STANDARDS-DETAILS FOR DOMESTIC WWTP ERS FORM

10. PERMITS REQUIRED

DOES THE PROPERTY HAVE ANY VIOLATIONS? IF SO PLEASE PROVIDE ALL VIOLATION NUMBERS: _____

☐ STORM WATER QUALITY
☐ SEPTIC (EXISTING) ☐ SEPTIC (PROPOSED)
☐ CIVIL SITE WORK (PHASE II PERMIT CLASS I (non-floodplain))
CIVIL SITE WORK (PHASE II PERMIT CLASS II (floodplain))
☐ DRIVEWAY WITH CULVERT _____ CURB AND GUTTER _____
☐ BUILDING PERMITS (NO. OF BUILDINGS = _____) ☐ CRITICAL FACILITY
☐ SUBDIVISION INFRASTRUCTURE PHASE II (NO. OF LOTS = _____)
☐ NOTICE OF DETENTION AFFIDAVIT REQUIRED
☐ MUD MAINTENANCE AGREEMENT REQUIRED
NOTES: _____

WORK IN HARRIS COUNTY R.O.W.

☐ UTILITY WORK _____
☐ TURN LANE _____
☐ OTHER CONSTRUCTION _____

NOTES:
A PERMIT IS REQUIRED FOR EACH SCOPE OF WORK ON SITE.
A R.O.W. NOTIFICATION IS REQUIRED FOR EACH SCOPE OF WORK IN HC OR HCFCD ROW.
REFER TO www.eng.hctx.net/permits FOR EACH SCOPE OF WORK IN HC OR IN HCFCD ROW.

BENCHMARK REQUIREMENTS FOR PROPOSED BRIDGES AND OR NEW RESIDENTIAL SUBIDVISIONS

When the County Engineer has determined that a new benchmark will be required to be established for the proposed project, the developer shall be required to install a benchmark per section 8.0, part 2 of the Harris County Infrastructure Regulations.

Is a new Benchmark required for this project? (*to be determined by Harris County*) [__] yes [__] no

If a new Benchmark is required, the proposed benchmark information is shown on sheets ____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

Development constructed or placed in accordance with these plans will comply with all provisions of the Regulations of Harris County, Texas for Floodplain Management.

No net fill is allowed in the flood plain and no fill is allowed in the floodway.

FOUNDATION NOTES: (*Applies to only buildings or building additions requiring a class II permit*)

All water heaters, furnaces, air conditioning units, electrical distribution panels, and any other mechanical or electrical equipment must be elevated in accordance with Section 4.05 of Harris County Floodplain regulations.

Any electrical circuit serving a light switch or outlet located below the base (100-year) flood elevation shall be dropped from above and be on a separate breaker.

All materials used below the (100-year) base flood elevation are on approved FEMA Technical Bulletin 2-08 as Class 5 water-resistant, and approved in accordance with FEMA Technical Bulletin 1-08 for foundation openings.

Critical facilities located in the 0.2% or 500yr floodplain or 1% or 100yr floodplain shall have the lowest floor elevated to 3 feet or more above the 0.2% flood elevation, or 24 inches above the crown of the adjacent road, which ever results in a higher elevation.

Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.

Access routes elevated to or above the level of the base flood shall be provided to all critical facilities to the extent possible.

A completed as-built certificate must be submitted after the structure is complete and before it is occupied.

The County Engineer's Office will post a final inspection notice on the structure once all requirements have been met.

No fill may be used to elevate structures in the 1% or 100yr flood plain. Structures may be constructed on an open foundation, such as piers, or on continuous foundation walls with properly sized and located openings. All foundations are required to be designed by a registered professional engineer.

All structures shall be designed to withstand a three second gust basic wind speed of 120mph.

*Completed ***Elevation Certificates** to be submitted: one at permitting, a second after the slab is poured or sub-floor is installed and before the framing starts, and a third is required once construction is finished. *(PER CURRENT FIRM PANEL) to the Harris County Engineering Department, 10555 Northwest Freeway, Suite 120, Houston, TX 77092*

HARRIS COUNTY ENGINEERING DEPARTMENT - PERMIT OFFICE NOTE:

THE PERMIT MANAGER SIGNATURE REPRESENTS THE FOLLOWING:
- THE COMPLETION OF REVIEW OF THESE PLANS
- INTERPOSE NO OBJECTION TO THE PROPOSED DESIGN ON PRIVATE PROPERTY
- APPROVAL OF WORK IN HARRIS COUNTY MAINTAINED RIGHT OF WAY
- APPROVAL OF WORK IN PROPOSED HARRIS COUNTY RIGHT OF WAY THAT IS TO BE ACCEPTED BY THE COUNTY

HCED SIGNATURE BLOCK:

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A. PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE. I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE PLANS IN THEIR ENTIRETY ARE DESIGNED PER THE HARRIS COUNTY ENGINEERING STANDARDS, REGULATIONS, AND GUIDELINES UNLESS PROVIDED A VARIANCE BY THE COUNTY ENGINEER OR HIS DESIGNEE. SHOULD IT BE DEEMED BY HCED STAFF, THAT THE PLANS DO NOT MEET THE COUNTY'S STANDARDS, REGULATIONS AND GUIDELINES AND DID NOT RECEIVE AN APPROVED VARIANCE, THE APPROVAL OF SAID PLANS BECOMES NULL AND VOID AND THE DESIGN PLANS MUST BE CORRECTED AT NO CHARGE TO THE COUNTY.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 225

CRAG A. PERRY — SIGNATURE
AUGUST 22, 2025 — DATE

SEAL
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Crag Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C. APPROVED DATE

HC PROJECT NO. 0000000000 | HCFCD PROJECT NO. 0000000000 | SHEET NUMBER 9 OF 225

Chestnut Ridge Lift Station

HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET

VERSION 20.0 MAY 27, 2020

DRAWING NO. G-101

IN REVIEW WITH HCED

PLOTTED: 8/22/2025 1:43 AM PEN TABLE: Z_PUB_WKS_H.ctb
FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\009 G-101.dwg

1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

A. HARRIS COUNTY COMMISSIONER'S PRECINCT:
☐ 1 ☐ 2 ☐ 3 ☐ 4

B. KEY MAP: _____

C. ADDRESS: _____

II. LEGAL DESCRIPTION

A. ACREAGE: _____

B. ☐ SUBDIVISION: _____

☐ SURVEY & ABSTRACT: _____

C. ADJACENT ROADS: _____

III. PLATTING

A. SUBDIVISION PLAT N/A
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT

PLAT NAME: _____

B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

IV. JURISDICTIONS

☐ CITY OF _____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ
☐ UTILITY DISTRICT (NAME)_____

V. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE _____

_____
_____
_____

2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION _____

II. METHODOLOGY

HCFCD PCPM DETENTION METHOD USED:
☐ METHOD 1 (LESS THAN 20 ACRES)
☐ METHOD 2 (20 ACRES TO 640 ACRES)
☐ METHOD 3 (GREATER THAN 640 ACRES)
☐ OTHER _____

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
☐ .65, H.C.F.C.D. CHANNEL, (H.C.F.C.D. UNIT NO.) _____
☐ .75, EXISTING STORM SEWER (OWNER & OPERATOR) _____
☐ 1.00, ROADSIDE DITCH, (OWNER & ROAD NAME) _____
☐ OTHER (OWNER & OPERATOR) _____

IV. STORMWATER DETENTION BASIN INFORMATION

A. HCFCD PCPM SUMMARY TABLE SEE SHEET _____ OF THESE PLANS.

DETENTION BASIN SERVICE AREA		acres	
STORM EVENT	50% EXCEEDANCE (2-YEAR)	10% EXCEEDANCE (10-YEAR)	1% EXCEEDANCE (100-YEAR)
MAXIMUM ALLOWABLE OUTFLOW (PRE-DEVELOPMENT PEAK FLOW)			
MAXIMUM OUTFLOW PROVIDED (PEAK FLOW FROM BASIN)			
LOWEST NATURAL/FINISHED GROUND OR FINISHED FLOOR ELEVATION ESTIMATE			
DESIGN WATER SURFACE ELEVATION			
MINIMUM STORAGE REQUIRED (ac-ft)			
DETENTION STORAGE PROVIDED (ac-ft)			
STORAGE RATE PROVIDED (ac-ft/ac)			
OUTFLOW VELOCITY INTO CHANNEL (ft/sec)			
DRAIN TIME – 1% ONLY (hours)			
EMERGENCY OVERFLOW (TYPE, SIZE, ELEVATION, ETC.)			

B. DETENTION BASIN TO BE MAINTAINED BY _____

C. DETENTION SERVICE AREA MAP ON SHEET _____

D. ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS
VOLUME OF PUMPED 1% EXCEEDANCE STORAGE VOLUME = _____ % OF TOTAL VOLUME
MAXIMUM DESIGN OUTFLOW VELOCITY INTO HCFCD CHANNEL = _____ FT/SEC
DRAIN TIME FOR BASIN = _____ HOURS BASED ON _____ HEAD POND

V. DETENTION PROVIDED IN OTHER PLANS:

HCFCD PROJECT No. _____ DATE SIGNED BY HCFCD: _____
PLAN TITLE _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET _____
ENGINEERING FIRM _____
DETENTION BASIN MAINTAINED BY: _____

VI. FLOW RESTRICTOR SIZE

OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____
RESTRICTOR PLATE DIMENSION: _____

VII. DETENTION PROVIDED BY

☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN
Development constructed or placed in accordance with these plans will comply with all provisions of the designated Floodplain Administrator.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = ____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) _____
☐ DISTURBS <1AC. N/A

*II. APPLICABILITY FOR PERMANENT FEATURES. (Must complete)

EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (Must be verified with plat)

EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A,Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)

EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)

GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT No _____ & SWQ PERMIT No. _____

STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN OR DETAILS(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)

☐ DETENTATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, ETC.) FORESTRY DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONSAPPEAR ON SHEET(S)_____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: _____
FIRM PANEL(S) DATE: _____
STATUS OF PROPERTY ON MAP
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL_____) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET____

ELEVATION INFORMATION
BENCHMARK USED
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION

☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY

(APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) ____ CUBIC YARDS _____
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) ____ CUBIC YARDS _____
INCLUDING CALCULATIONS)
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD HCFCD ROW

A. BOND/NOTIFICATION INFORMATION
☐ HCFCD WATERSHED _____
☐ HCFCD UNIT No. _____
☐ NUMBER OF OUTFALLS _____
☐ UTILITY CROSSING
☐ ROADWAY BRIDGE/CULVERT CROSSING
☐ FILL ACTIVITY
☐ REHABILITATION OF CHANNEL
☐ MAINTENANCE
☐ TEMPORARY CROSSING
☐ TRAIL (LENGTH) _____
☐ OTHER _____
COST OF WORK IN HCFCD ROW _____

II. USACE ENVIRONMENTAL PERMIT

☐ US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER(S) _____
☐ US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
☐ OTHER
☐ NO PERMITS REQUIRED
EXPLAIN: _____

III. REFERENCE / BASIS OF DETERMINATION

☐ ENVIRONMENTAL CONSULTANT REPORT
BY _____
REPORT TITLE _____
REPORT DATE _____
☐ OTHER _____

NOTES:
I. – III. REQUIRED ON PROJECTS WITH WORK IN A HCFCD CHANNEL. PLEASE REFERENCE SECTION 17 OF THE FLOOD CONTROL DISTRICT POLICY, CRITERIA, AND PROCEDURE MANUAL FOR MORE INFORMATION.

IV. HCFCD STANDARD NOTES: SEE SHEET _____ OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET _____ OF THESE PLANS.

VI. HCFCD ACCESS PLAN: SEE SHEET _____ OF THESE PLANS.

VII. REFER TO THE FOLLOWING PLAN SHEETS: _____
FOR EXISTING AND PROPOSED RIGHT(S) OF WAY INCLUDING DELINEATION AND RECORDING INFORMATION PER HCFCD POLICY, CRITERIA, & PROCEDURE MANUAL (i.e., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (e.g. COH, HCFCD, PUBLIC, TXDOT, ETC.)

6. REPORTS/AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

REPORT TITLE _____
_____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

REPORT TITLE _____
_____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

DESCRIPTION OF VARIANCE _____
_____
DOCUMENT ID #_____
VARIANCE ACCEPTANCE DATE _____

II. AGREEMENT TYPE & No.;

☐ INTERLOCAL (ILA): _____
☐ HCFCD MAINTENANCE _____
☐ TURF ESTABLISHMENT _____
☐ OTHER _____

IN REVIEW WITH HCFCD

HCFCD SIGNATURE BLOCK

PROJECT NAME: _____

ADDRESS: _____

WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION
BY _____
FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY

APPROVED:
BY _____
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY

APPROVED:
BY _____
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY

NO REVIEW REQUIRED:
BY _____
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:
_____
_____
_____
_____
_____

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A. PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE.

ANY VIOLATIONS WILL BE FORWARDED TO THE HARRIS COUNTY DISTRICT ATTORNEY'S OFFICE FOR PROSECUTION.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 225

CRAG A. PERRY (SIGNATURE) AUGUST 22, 2025 (DATE)

SEAL
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Crag Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY FLOOD CONTROL.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C.F.C.D APPROVED DATE

Chestnut Ridge Lift Station

HARRIS COUNTY FLOOD CONTROL DISTRICT
REVIEW SHEET

VERSION 1.0 OCTOBER 2019

DRAWING NO. G-102

HARRIS COUNTY FLOOD CONTROL PROJECT NO. 0000000000

SHEET NUMBER 10 OF 225

PLOTTED: 8/22/2025 1:43 AM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\010 G-102.dwg

1. PAVING

(FOR H.C. PUBLIC R.O.W. ONLY)

CONCRETE	DESIGN THICKNESS OF PAVING	STABILIZED SUBGRADE DEPTH	DESIGN STRENGTH OF CONCRETE	STEEL SPACING		REINFORCE STEEL SIZE
				LONG.	TRANS.	
	(IN.)	(IN.)	(PSI)	(IN.)	(IN.)	(#4 MIN.)

ASPHALT	DESIGN SURFACE COURSE THICKNESS	DESIGN SURFACE COURSE TYPE	DESIGN BASE COURSE THICKNESS	DESIGN BASE COURSE TYPE	STABILIZED SUBGRADE THICKNESS	STABILIZED SUBGRADE TYPE
	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)

DRIVEWAYS (in H.C. ROW only)

I. NUMBER OF DRIVEWAY APPROACHES PROPOSED INCLUDE WIDENING OR REPAVING EXISTING DRIVEWAYS AS WELL AS NEW DRIVEWAYS

DRWY	WIDTH	MATERIAL	CULVERT?	CULVERT LENGTH	NEAREST X-STREET	DIST. TO X-STREET
1						
2						
3						
4						
5						

II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET ____

FIRE APPARATUS ACCESS ROAD

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED DUE TO _____

CURBING

I. ISLANDS, MEDIANS AND ALL AREAS NOT TAKING DIRECT DRIVEWAY ACCESS REQUIRES STANDARD 6" CURBING

II. ☐ STANDARD 6" CURBING PROPOSED
☐ 4" x 12" CURBING PROPOSED EXCEPT AT MEDIANS AND ISLANDS

TRAFFIC CONSIDERATIONS

I. MEDIAN CUTS
☐ NO MEDIAN CUT OR RELOCATION IS PROPOSED
☐ MEDIAN MODIFICATIONS ARE SHOWN ON SHEET _____

II. LEFT / RIGHT TURN LANE
☐ NO LEFT / RIGHT TURN LANE IS PROPOSED
☐ LEFT / RIGHT TURN LANE IS SHOWN ON SHEET _____

III. TRAFFIC CONTROL PLAN
☐ NO WORK IN THE RIGHT OF WAY IS PROPOSED THAT WOULD INTERFERE WITH TRAFFIC FLOW
☐ TRAFFIC CONTROL SHOWN ON SHEET _____

IV. TRAFFIC SIGNAL
☐ NO TRAFFIC SIGNAL IS EXISTING / PROPOSED
☐ EXISTING TRAFFIC SIGNAL DEVICES (T.C. BOXES AND LOOPS) SHOWN ON SHEET _____
☐ PROPOSED TRAFFIC SIGNAL (BY OTHERS)

V. TRAFFIC IMPACT ANALYSIS
☐ NO TRAFFIC IMPACT ANALYSIS IS REQUIRED
☐ TRAFFIC IMPACT ANALYSIS HAS BEEN APPROVED ON DATE:_____
PLAN TITLE: _____
HCPID PROJECT NO.: _____

5. DESCRIPTION OF PROPERTY

I. LEGAL DESCRIPTION
A. ACREAGE: _____
B. ☐ SUBDIVISION: _____
☐ SURVEY & ABSTRACT: _____
C. ADJACENT ROADS: _____

II. PLATTING
A. SUBDIVISION PLAT
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT
PLAT NAME:
B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

III. JURISDICTIONS
☐ CITY OF_____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF_____
☐ NO ETJ

IV. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE _____

V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.)
☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

NOTE: ALL APPROVED, FINAL PLATS AND ASSOCIATED CPC101 FORMS MUST BE INCLUDED WITH PLAN SUBMITTAL.

☐ CONFORMING SUBDIVISION
☐ NON-CONFORMING SUBDIVISION
☐ PARTIALLY NON-CONFORMING SUBDIVISION

2. RESIDENTIAL / SUBDIVISION DRAINAGE

I. PROPOSED DRAINAGE SYSTEM TYPE
☐ STORM SEWER
☐ ROADSIDE DITCH
☐ LOW IMPACT DEVELOPMENT (LID)

II. DESIGN METHOD USED
☐ CITY OF HOUSTON _____ YEAR FREQUENCY
☐ OTHER: _____

III. DRAINAGE SYSTEM OUTFALLS DIRECTLY TO EXISTING
☐ DETENTION POND (APPROVED H.C. PRJ NO.): _____
DETENTION POND MAINTAINED BY: _____
☐ HCFCD DRAINAGE DITCH UNIT NO.: _____
☐ H.C. ROADSIDE DITCH (ROAD NAME): _____
☐ H.C. STORM SEWER (APPROVED H.C. PRJ NO.): _____

IV. H.C. OUTFALL CALCULATIONS
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

V. DETENTION PROVIDED BY
☐ DETENTION BASIN IS PART THIS PLAN SET. SERVICE AREA MAP IS ON SHEET ___
☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

PROPOSED STORM SEWER IS SUBMERGED (AGREEMENT MUST BE PROVIDED).
STATIC W.S.E. @ OUTFALL IS _____.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = _____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

6. STORMWATER QUALITY

I. SWPPP: CONSTRUCTION MEASURES. (Complete for ALL projects)
☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S)_____
☐ DISTURBS <1AC. N/A

II. APPLICABILITY FOR PERMANENT FEATURES. (must be completed on all projects)
EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES (must be verified with plat)
EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A, Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)
EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)
GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT NO. _____ & SWQ PERMIT NO. _____
STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN ON SHEET(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)
☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY) DETAILS AND CALCULATIONS APPEAR ON SHEET(S)_____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

3. COMMERCIAL / OTHER SITE DRAINAGE

I. PROPOSED DRAINAGE AREA
☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (NET NEW DEVELOPED AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)

II. DETENTION VOLUME
NEW AREA_____ X _____ = _____ ACRE FEET
DETENTION REQUIRED
✻☐ .65 (CHANNEL)
✻☐ .75 (STM SWR)
✻☐ 1.00 (RD. DITCH)
✻☐ OTHER: _____
PROPOSED DETENTION VOLUME = _____ ACRE FEET
PROPOSED DETENTION VOLUME CALCULATIONS ARE SHOWN ON SHEET _____
DETENTION VOLUME PROVIDED BY EXISTING DETENTION POND
APPROVED H.C. PROJECT NO.: _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET ____

III. OUTFALL
OUTFALL TO ☐ H.C. ROADSIDE DITCH
☐ EXISTING H.C. STORM SEWER
☐ OTHER _____
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

IV. PUMPED DETENTION FACILITIES
VOLUME THAT GRAVITY FLOWS:_____ACRE FEET
VOLUME THAT IS PUMPED:_____ACRE FEET
ENTRANCE VELOCITY INTO ROADSIDE DITCH OR STORM SEWER: _____
PUMP SPECIFICATIONS AND AUTOMATIC SHUTOFF PLAN FOR ROADSIDE DITCH & STORM SEWER OUTFALLS APPEAR ON SHEET _____

V. FLOW RESTRICTOR SIZE
OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____

NOTE: ALL ROADSIDE DITCH OUTFALLS REQUIRE EROSION CONTROL MEASURES. RIPRAP IS NOT ALLOWED AS AN EROSION CONTROL MEASURE IN HARRIS COUNTY ROW. ALL PUMPED DETENTION OUTFALLS TO ROADSIDE DITCHES REQUIRE MANHOLE W/ LEADS.

7. FLOOD PLAIN STATUS

I. GENERAL INFORMATION
FIRM PANEL NUMBER FOR PROJECT: _____
FIRM PANEL EFFECTIVE DATE: _____
STATUS OF PROPERTY ON MAP:
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN SHADED ZONE "X" OR SHADED ZONE "X", (SEE FLOODPLAIN BOUNDARY NOTATION ON SURVEY/CONSTRUCTION DRAWINGS (GRADING LAYOUT PG. NO. _____) (1% ANNUAL CHANCE FLOOD LEVEL_____)
☐ LOCATED IN ZONE A (0.2% ANNUAL CHANCE FLOOD LEVEL_____)
☐ PROPERTY REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA
CASE NO._____ EFFECTIVE DATE _____
☐ REVISED FLOODPLAIN IS SHOWN ON SHEET_____
ELEVATION INFORMATION
BENCHMARK USED:
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION
☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FLOODPLAIN AS DELINEATED BY FIRM PANEL).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

IV. ☐LOMR REQUIRED ☐CLOMR REQUIRED VERIFIED BY: _____

8. CURB RAMPS

A. ARE CURB RAMPS THAT CONNECT TO PUBLIC STREETS PROPOSED IN THIS SET OF PLANS? ☐ YES ☐ NO

9. LANDSCAPING

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

4. WATER AND WASTEWATER

I. COMMERCIAL PROJECTS
DOES PROPERTY HAVE EXISTING AND/OR PROPOSED UTILITIES?
☐ YES ☐ NO
IF YES, CHECK THE BOX THAT APPLIES TO THIS PROJECT
☐ PUBLIC WATER & SANITARY
☐ PRIVATE WATER WELL & SEPTIC SYSTEM
☐ PUBLIC WATER & PRIVATE SEPTIC SYSTEM
☐ PRIVATE WATER WELL & PUBLIC SANITARY

NOTE: PUBLIC UTILITIES REQUIRE A LETTER FROM THE DISTRICT/ MUNICIPALITY AUTHORIZING SERVICE & CONNECTION. THIS IS REQUIRED FOR PLAN APPROVAL.
UTILITY DISTRICT/MUNICIPALITY NAME: _____
NOTE: SEPTIC SYSTEMS REQUIRE H.C. WASTE WATER REVIEW
H.C. SEPTIC PERMIT/REQUEST NO. _____
NOTE: ALL EXISTING AND PROPOSED UTILITIES MUST BE ACCURATELY SHOWN & LABELED ON THE SITE PLANS.

II. SUBDIVISION PROJECTS
☐ UTILITY DISTRICT/MUNICIPALITY NAME: _____
☐ PRIVATE WATER & WASTE WATER SYSTEMS
☐ PRIVATE WATER & INDIVIDUAL OSSF
☐ INDIVIDUAL WATER WELL & OSSF

NOTE: A COPY OF TCEQ APPROVAL FOR PRIVATE WATER & WASTE WATER SYSTEMS IS REQUIRED FOR PLAN APPROVAL

*NOTE: DEDICATED UNDERGROUND FIRE LINES MUST BE SUBMITTED TO THE HARRIS COUNTY FIRE PROTECTION GROUP FOR REVIEW AND PERMITTING BY THE UNDERGROUND FIRE LINE CONTRACTOR. CIVIL REITEW DOES **NOT** REVIEW OR APPROVE UNDERGROUND FIRE LINES FOR THE FIRE PROTECTION SYSTEMS.*

WASTEWATER TREATMENT PLANTS

H.C. WWTP REVIEW:
IS THE PROPOSED PROJECT A NEW WWTP SITE OR A REHAB/EXPANSION OF AN EXISTING WWTP SITE? *YES* ☐ *NO* ☐
IF YES, IS A HARRIS COUNTY DOMESTIC WASTEWATER TREATMENT PLANT EXPRES REVIEW SHEET ATTACHED AND COMPLETED ACCORDING TO INSTRUCTIONS? *YES* ☐ *NO* ☐
REFER TO:
WWW.ENG.HCTX.NET/PERMITS/WASTEWATER/REGULATIONS-STANDARDS-DETAILS FOR DOMESTIC WWTP ERS FORM

10. PERMITS REQUIRED

DOES THE PROPERTY HAVE ANY VIOLATIONS? IF SO PLEASE PROVIDE ALL VIOLATION NUMBERS. _____

☐ STORM WATER QUALITY
☐ SEPTIC (EXISTING) ☐ SEPTIC (PROPOSED)
☐ CIVIL SITE WORK (PHASE II PERMIT CLASS I (non-floodplain))
CIVIL SITE WORK (PHASE II PERMIT CLASS II (floodplain))
☐ DRIVEWAY WITH CULVERT _____ CURB AND GUTTER _____
☐ BUILDING PERMITS (NO. OF BUILDINGS = _____) ☐ CRITICAL FACILITY
☐ SUBDIVISION INFRASTRUCTURE PHASE II (NO. OF LOTS = _____)
☐ NOTICE OF DETENTION AFFIDAVIT REQUIRED
☐ MUD MAINTENANCE AGREEMENT REQUIRED
NOTES: _____

WORK IN HARRIS COUNTY R.O.W.

☐ UTILITY WORK _____
☐ TURN LANE _____
☐ OTHER CONSTRUCTION _____

NOTES:
A PERMIT IS REQUIRED FOR EACH SCOPE OF WORK ON SITE.
A R.O.W. NOTIFICATION IS REQUIRED FOR EACH SCOPE OF WORK IN HC OR HCFCD ROW.
REFER TO www.eng.hctx.net/permits FOR EACH SCOPE OF WORK IN HC OR IN HCFCD ROW.

BENCHMARK REQUIREMENTS FOR PROPOSED BRIDGES AND OR NEW RESIDENTIAL SUBIDIVSIONS

When the County Engineer has determined that a new benchmark will be required to be established for the proposed project, the developer shall be required to install a benchmark per section 8.0, part 2 of the Harris County Infrastructure Regulations.

Is a new Benchmark required for this project? (*to be determined by Harris County*) [__] yes [__] no

If a new Benchmark is required, the proposed benchmark information is shown on sheets ____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

Development constructed or placed in accordance with these plans will comply with all provisions of the Regulations of Harris County, Texas for Floodplain Management.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.
FOUNDATION NOTES: (*Applies to only buildings or building additions requiring a class II permit*)
All water heaters, furnaces, air conditioning units, electrical distribution panels, and any other mechanical or electrical equipment must be elevated in accordance with Section 4.05 of Harris County Floodplain regulations.
Any electrical circuit serving a light switch or outlet located below the base (100-year) flood elevation shall be dropped from above and be on a separate breaker.
All materials used below the (100-year) base flood elevation are on approved FEMA Technical Bulletin 2-08 as Class 5 water-resistant, and approved in accordance with FEMA Technical Bulletin 1-08 for foundation openings.
Critical facilities located in the 0.2% or 500yr floodplain or 1% or 100yr floodplain shall have the lowest floor elevated to 3 feet or more above the 0.2% flood elevation, or 24 inches above the crown of the adjacent road, which ever results in a higher elevation.
Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.
Access routes elevated to or above the level of the base flood shall be provided to all critical facilities to the extent possible.
A completed as-built certificate must be submitted after the structure is complete and before it is occupied.
The County Engineer's Office will post a final inspection notice on the structure once all requirements have been met.
No fill may be used to elevate structures in the 1% or 100yr flood plain. Structures may be constructed on an open foundation, such as piers, or on continuous foundation walls with properly sized and located openings. All foundations are required to be designed by a registered professional engineer.
All structures shall be designed to withstand a three second gust basic wind speed of 120mph.
*Completed ***Elevation Certificates** to be submitted: one at permitting, a second after the slab is poured or sub-floor is installed and before the framing starts, and a third is required once construction is finished. *(PER CURRENT FIRM PANEL) to the Harris County Engineering Department, 10555 Northwest Freeway, Suite 120, Houston, TX 77092*

HARRIS COUNTY ENGINEERING DEPARTMENT - PERMIT OFFICE NOTE:

THE PERMIT MANAGER SIGNATURE REPRESENTS THE FOLLOWING:
- THE COMPLETION OF REVIEW OF THESE PLANS
- INTERPOSE NO OBJECTION TO THE PROPOSED DESIGN ON PRIVATE PROPERTY
- APPROVAL OF WORK IN HARRIS COUNTY MAINTAINED RIGHT OF WAY
- APPROVAL OF WORK IN PROPOSED HARRIS COUNTY RIGHT OF WAY THAT IS TO BE ACCEPTED BY THE COUNTY

HCED SIGNATURE BLOCK:

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A. PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE. I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE PLANS IN THEIR ENTIRETY ARE DESIGNED PER THE HARRIS COUNTY ENGINEERING STANDARDS, REGULATIONS, AND GUIDELINES UNLESS PROVIDED A VARIANCE BY THE COUNTY ENGINEER OR HIS DESIGNEE. SHOULD IT BE DEEMED BY HCED STAFF, THAT THE PLANS DO NOT MEET THE COUNTY'S STANDARDS, REGULATIONS AND GUIDELINES AND DID NOT RECEIVE AN APPROVED VARIANCE, THE APPROVAL OF SAID PLANS BECOMES NULL AND VOID AND THE DESIGN PLANS MUST BE CORRECTED AT NO CHARGE TO THE COUNTY.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 225

CRAG A. PERRY — SIGNATURE
AUGUST 22, 2025 — DATE

SEAL
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Crag Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C. APPROVED DATE

HC PROJECT NO. 0000000000 HCFCD PROJECT NO. 0000000000 SHEET NUMBER 11 OF 225

Ladbrook Lift Station

VERSION 20.0 MAY 27, 2020

HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET

DRAWING NO. G-201

IN REVIEW WITH HCED

PLOTTED: 8/22/2025 1:43 AM PEN TABLE: Z_PUB_WKS_H.ctb
FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\011 G-201.dwg

1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

A. HARRIS COUNTY COMMISSIONER'S PRECINCT:
☐ 1 ☐ 2 ☐ 3 ☐ 4

B. KEY MAP: _____

C. ADDRESS: _____

II. LEGAL DESCRIPTION

A. ACREAGE: _____

B. ☐ SUBDIVISION: _____

☐ SURVEY & ABSTRACT: _____

C. ADJACENT ROADS: _____

III. PLATTING

A. SUBDIVISION PLAT N/A
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT

B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

PLAT NAME: _____

IV. JURISDICTIONS

☐ CITY OF _____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ
☐ UTILITY DISTRICT (NAME)_____

V. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE_____

_____
_____
_____

2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION _____

II. METHODOLOGY

HCFCD PCPM DETENTION METHOD USED:
☐ METHOD 1 (LESS THAN 20 ACRES)
☐ METHOD 2 (20 ACRES TO 640 ACRES)
☐ METHOD 3 (GREATER THAN 640 ACRES)
☐ OTHER _____

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
☐ .65, H.C.F.C.D. CHANNEL, (H.C.F.C.D. UNIT NO.) _____
☐ .75, EXISTING STORM SEWER (OWNER & OPERATOR) _____
☐ 1.00, ROADSIDE DITCH, (OWNER & ROAD NAME) _____
☐ OTHER (OWNER & OPERATOR) _____

IV. STORMWATER DETENTION BASIN INFORMATION

A. HCFCD PCPM SUMMARY TABLE SEE SHEET _____ OF THESE PLANS.

DETENTION BASIN SERVICE AREA		acres	
STORM EVENT	50% EXCEEDANCE (2-YEAR)	10% EXCEEDANCE (10-YEAR)	1% EXCEEDANCE (100-YEAR)
MAXIMUM ALLOWABLE OUTFLOW (PRE-DEVELOPMENT PEAK FLOW)			
MAXIMUM OUTFLOW PROVIDED (PEAK FLOW FROM BASIN)			
LOWEST NATURAL/FINISHED GROUND OR FINISHED FLOOR ELEVATION ESTIMATE			
DESIGN WATER SURFACE ELEVATION			
MINIMUM STORAGE REQUIRED (ac-ft)			
DETENTION STORAGE PROVIDED (ac-ft)			
STORAGE RATE PROVIDED (ac-ft/ac)			
OUTFLOW VELOCITY INTO CHANNEL (ft/sec)			
DRAIN TIME – 1% ONLY (hours)			
EMERGENCY OVERFLOW (TYPE, SIZE, ELEVATION, ETC.)			

B. DETENTION BASIN TO BE MAINTAINED BY _____

C. DETENTION SERVICE AREA MAP ON SHEET _____

D. ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS
VOLUME OF PUMPED 1% EXCEEDANCE STORAGE VOLUME = _____ % OF TOTAL VOLUME
MAXIMUM DESIGN OUTFLOW VELOCITY INTO HCFCD CHANNEL = _____ FT/SEC
DRAIN TIME FOR BASIN = _____ HOURS BASED ON _____ HEAD AND

V. DETENTION PROVIDED IN OTHER PLANS:

HCFCD PROJECT No. _____ DATE SIGNED BY HCFCD: _____
PLAN TITLE _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET _____
ENGINEERING FIRM _____
DETENTION BASIN MAINTAINED BY: _____

VI. FLOW RESTRICTOR SIZE

OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____
RESTRICTOR PLATE DIMENSION: _____

VII. DETENTION PROVIDED BY

☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN
Development constructed or placed in accordance with these plans will comply with all provisions of the designated Floodplain Administrator.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = ____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) _____
☐ DISTURBS <1AC. N/A

*II. APPLICABILITY FOR PERMANENT FEATURES. (Must complete)

EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (Must be verified with plat)

EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A,Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)

EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)

GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT No _____ & SWQ PERMIT No.

STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN OR DETAILS(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)

☐ DETENTION CONTROLS USED: (FILTER STRIP, GRASSY SWALE, BIO-RETENTION, FORESTRY DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONSAPPEAR ON SHEET(S)_____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: _____
FIRM PANEL(S) DATE: _____
STATUS OF PROPERTY ON MAP
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL_____) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET____

ELEVATION INFORMATION
BENCHMARK USED
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION

☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY

(APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) ____ CUBIC YARDS _____
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) ____ CUBIC YARDS _____
INCLUDING CALCULATIONS)
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD HCFCD ROW

A. BOND/NOTIFICATION INFORMATION
☐ HCFCD WATERSHED _____
☐ HCFCD UNIT No. _____
☐ NUMBER OF OUTFALLS _____
☐ UTILITY CROSSING
☐ ROADWAY BRIDGE/CULVERT CROSSING
☐ FILL ACTIVITY
☐ REHABILITATION OF CHANNEL
☐ MAINTENANCE
☐ TEMPORARY CROSSING
☐ TRAIL (LENGTH) _____
☐ OTHER _____
COST OF WORK IN HCFCD ROW _____

II. USACE ENVIRONMENTAL PERMIT

☐ US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER(S) _____
☐ US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
☐ OTHER
☐ NO PERMITS REQUIRED
EXPLAIN: _____

III. REFERENCE / BASIS OF DETERMINATION

☐ ENVIRONMENTAL CONSULTANT REPORT
BY _____
REPORT TITLE _____
REPORT DATE _____
☐ OTHER _____

NOTES:
1. – III. REQUIRED ON PROJECTS WITH WORK IN A HCFCD CHANNEL. PLEASE REFERENCE SECTION 17 OF THE FLOOD CONTROL DISTRICT POLICY, CRITERIA, AND PROCEDURE MANUAL FOR MORE INFORMATION.

IV. HCFCD STANDARD NOTES: SEE SHEET _____ OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET _____ OF THESE PLANS.

VI. HCFCD ACCESS PLAN: SEE SHEET _____ OF THESE PLANS.

VII. REFER TO THE FOLLOWING PLAN SHEETS: _____
FOR EXISTING AND PROPOSED RIGHT(S) OF WAY INCLUDING DELINEATION AND RECORDING INFORMATION PER HCFCD POLICY, CRITERIA, & PROCEDURE MANUAL (i.e., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (e.g. COH, HCFCD, PUBLIC, TXDOT, ETC.)

6. REPORTS/AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

REPORT TITLE _____
_____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

REPORT TITLE _____
_____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

DESCRIPTION OF VARIANCE _____
_____
DOCUMENT ID #_____
VARIANCE ACCEPTANCE DATE _____

II. AGREEMENT TYPE & No.;

☐ INTERLOCAL (ILA): _____
☐ HCFCD MAINTENANCE _____
☐ TURF ESTABLISHMENT _____
☐ OTHER _____

IN REVIEW WITH HCFCD

HCFCD SIGNATURE BLOCK

PROJECT NAME: _____

ADDRESS: _____

WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION
BY _____
FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY

APPROVED:
BY _____
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY

APPROVED:
BY _____
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY

NO REVIEW REQUIRED:
BY _____
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:
_____
_____
_____
_____
_____

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A. PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE.

ANY VIOLATIONS WILL BE FORWARDED TO THE HARRIS COUNTY DISTRICT ATTORNEY'S OFFICE FOR PROSECUTION.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 225

CRAG A. PERRY (SIGNATURE) AUGUST 22, 2025 (DATE)

SEAL
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes. This document is released for the purpose of interim review under the authority of:
Crag Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY FLOOD CONTROL.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C.F.C.D APPROVED DATE

Ladbrook Lift Station

HARRIS COUNTY FLOOD CONTROL DISTRICT REVIEW SHEET

VERSION 1.0 OCTOBER 2019

DRAWING NO. G-202

HARRIS COUNTY FLOOD CONTROL PROJECT NO. 0000000000

SHEET NUMBER 12 OF 225

PLOTTED: 8/22/2025 1:43 AM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\012 G-202.dwg

1. PAVING

(FOR H.C. PUBLIC R.O.W. ONLY)

	DESIGN THICKNESS OF PAVING	STABILIZED SUBGRADE DEPTH	DESIGN STRENGTH OF CONCRETE	STEEL SPACING		REINFORCE STEEL SIZE
				LONG.	TRANS.	
CONCRETE	(IN.)	(IN.)	(PSI)	(IN.)	(IN.)	(#4 MIN.)

	DESIGN SURFACE COURSE THICKNESS	DESIGN SURFACE COURSE TYPE	DESIGN BASE COURSE THICKNESS	DESIGN BASE COURSE TYPE	STABILIZED SUBGRADE THICKNESS	STABILIZED SUBGRADE TYPE
ASPHALT	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)

DRIVEWAYS (in H.C. ROW only)

I. NUMBER OF DRIVEWAY APPROACHES PROPOSED INCLUDE WIDENING OR REPAVING EXISTING DRIVEWAYS AS WELL AS NEW DRIVEWAYS

DRWY	WIDTH	MATERIAL	CULVERT?	CULVERT LENGTH	NEAREST X-STREET	DIST. TO X-STREET
1						
2						
3						
4						
5						

II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET ____

FIRE APPARATUS ACCESS ROAD

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED DUE TO _____

CURBING

I. ISLANDS, MEDIANS AND ALL AREAS NOT TAKING DIRECT DRIVEWAY ACCESS REQUIRES STANDARD 6" CURBING

II. ☐ STANDARD 6" CURBING PROPOSED
☐ 4" x 12" CURBING PROPOSED EXCEPT AT MEDIANS AND ISLANDS

TRAFFIC CONSIDERATIONS

I. MEDIAN CUTS
☐ NO MEDIAN CUT OR RELOCATION IS PROPOSED
☐ MEDIAN MODIFICATIONS ARE SHOWN ON SHEET _____

II. LEFT / RIGHT TURN LANE
☐ NO LEFT / RIGHT TURN LANE IS PROPOSED
☐ LEFT / RIGHT TURN LANE IS SHOWN ON SHEET _____

III. TRAFFIC CONTROL PLAN
☐ NO WORK IN THE RIGHT OF WAY IS PROPOSED THAT WOULD INTERFERE WITH TRAFFIC FLOW
☐ TRAFFIC CONTROL SHOWN ON SHEET _____

IV. TRAFFIC SIGNAL
☐ NO TRAFFIC SIGNAL IS EXISTING / PROPOSED
☐ EXISTING TRAFFIC SIGNAL DEVICES (T.C. BOXES AND LOOPS) SHOWN ON SHEET _____
☐ PROPOSED TRAFFIC SIGNAL (BY OTHERS)

V. TRAFFIC IMPACT ANALYSIS
☐ NO TRAFFIC IMPACT ANALYSIS IS REQUIRED
☐ TRAFFIC IMPACT ANALYSIS HAS BEEN APPROVED ON DATE:_____
PLAN TITLE: _____
HCPID PROJECT NO.: _____

5. DESCRIPTION OF PROPERTY

I. LEGAL DESCRIPTION
A. ACREAGE: _____
B. ☐ SUBDIVISION: _____
☐ SURVEY & ABSTRACT: _____
C. ADJACENT ROADS: _____

II. PLATTING
A. SUBDIVISION PLAT
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT
PLAT NAME: _____
B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

III. JURISDICTIONS
☐ CITY OF_____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF_____
☐ NO ETJ

IV. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE _____

V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.)
☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

NOTE: ALL APPROVED, FINAL PLATS AND ASSOCIATED CPC101 FORMS MUST BE INCLUDED WITH PLAN SUBMITTAL.

☐ CONFORMING SUBDIVISION
☐ NON-CONFORMING SUBDIVISION
☐ PARTIALLY NON-CONFORMING SUBDIVISION

2. RESIDENTIAL / SUBDIVISION DRAINAGE

I. PROPOSED DRAINAGE SYSTEM TYPE
☐ STORM SEWER
☐ ROADSIDE DITCH
☐ LOW IMPACT DEVELOPMENT (LID)

II. DESIGN METHOD USED
☐ CITY OF HOUSTON _____ YEAR FREQUENCY
☐ OTHER: _____

III. DRAINAGE SYSTEM OUTFALLS DIRECTLY TO EXISTING
☐ DETENTION POND (APPROVED H.C. PRJ NO.): _____
DETENTION POND MAINTAINED BY: _____
☐ HCFCD DRAINAGE DITCH UNIT NO.: _____
☐ H.C. ROADSIDE DITCH (ROAD NAME): _____
☐ H.C. STORM SEWER (APPROVED H.C. PRJ NO.): _____

IV. H.C. OUTFALL CALCULATIONS
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

V. DETENTION PROVIDED BY
☐ DETENTION BASIN IS PART THIS PLAN SET. SERVICE AREA MAP IS ON SHEET ___
☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

PROPOSED STORM SEWER IS SUBMERGED (AGREEMENT MUST BE PROVIDED).
STATIC W.S.E. @ OUTFALL IS _____.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = _____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

6. STORMWATER QUALITY

I. SWPPP: CONSTRUCTION MEASURES. (Complete for ALL projects)
☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S)_____
☐ DISTURBS <1AC. N/A

II. APPLICABILITY FOR PERMANENT FEATURES. (must be completed on all projects)
EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES (must be verified with plat)
EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A, Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)
EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)
GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT NO. _____ & SWQ PERMIT NO. _____
STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN ON SHEET(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)
☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY) DETAILS AND CALCULATIONS APPEAR ON SHEET(S)_____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

3. COMMERCIAL / OTHER SITE DRAINAGE

I. PROPOSED DRAINAGE AREA
☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (NET NEW DEVELOPED AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)

II. DETENTION VOLUME
NEW AREA_____X_*_=_____ACRE FEET
DETENTION REQUIRED
*☐ .65 (CHANNEL)
*☐ .75 (STM SWR)
*☐ 1.00 (RD. DITCH)
*☐ OTHER: _____
PROPOSED DETENTION VOLUME = _____ ACRE FEET
PROPOSED DETENTION VOLUME CALCULATIONS ARE SHOWN ON SHEET _____
DETENTION VOLUME PROVIDED BY EXISTING DETENTION POND
APPROVED H.C. PROJECT NO.: _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET ____

III. OUTFALL
OUTFALL TO ☐ H.C. ROADSIDE DITCH
☐ EXISTING H.C. STORM SEWER
☐ OTHER _____
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

IV. PUMPED DETENTION FACILITIES
VOLUME THAT GRAVITY FLOWS:_____ACRE FEET
VOLUME THAT IS PUMPED:_____ACRE FEET
ENTRANCE VELOCITY INTO ROADSIDE DITCH OR STORM SEWER: _____
PUMP SPECIFICATIONS AND AUTOMATIC SHUTOFF PLAN FOR ROADSIDE DITCH & STORM SEWER OUTFALLS APPEAR ON SHEET _____

V. FLOW RESTRICTOR SIZE
OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____

NOTE: ALL ROADSIDE DITCH OUTFALLS REQUIRE EROSION CONTROL MEASURES. RIPRAP IS NOT ALLOWED AS AN EROSION CONTROL MEASURE IN HARRIS COUNTY ROW. ALL PUMPED DETENTION OUTFALLS TO ROADSIDE DITCHES REQUIRE MANHOLE W/ LEADS.

7. FLOOD PLAIN STATUS

I. GENERAL INFORMATION
FIRM PANEL NUMBER FOR PROJECT: _____
FIRM PANEL DATE: _____
STATUS OF PROPERTY ON MAP:
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN ZONE A OR SHADED ZONE "X",
(APPROXIMATE FLOODPLAIN BOUNDARY SHOWN ON CONSTRUCTION DRAWINGS (CONSTRUCTION LAYOUT PG. NO. _____) (1% ANNUAL FLOOD LEVEL_____)
☐ (0.2% BASE FLOOD LEVEL_____)
☐ PROPERTY REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA
CASE NO._____ (COPY OF LOMR ISSUED) FLOODPLAIN IS SHOWN ON SHEET_____
ELEVATION INFORMATION
BENCHMARK USED:
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION
☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FLOODPLAIN AS DELINEATED BY FIRM PANEL).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

IV. ☐LOMR REQUIRED ☐CLOMR REQUIRED VERIFIED BY: _____

8. CURB RAMPS

A. ARE CURB RAMPS THAT CONNECT TO PUBLIC STREETS PROPOSED IN THIS SET OF PLANS? ☐ YES ☐ NO

9. LANDSCAPING

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

4. WATER AND WASTEWATER

I. COMMERCIAL PROJECTS
DOES PROPERTY HAVE EXISTING AND/OR PROPOSED UTILITIES?
☐ YES ☐ NO
IF YES, CHECK THE BOX THAT APPLIES TO THIS PROJECT
☐ PUBLIC WATER & SANITARY
☐ PRIVATE WATER WELL & SEPTIC SYSTEM
☐ PUBLIC WATER & PRIVATE SEPTIC SYSTEM
☐ PRIVATE WATER WELL & PUBLIC SANITARY

NOTE: PUBLIC UTILITIES REQUIRE A LETTER FROM THE DISTRICT/ MUNICIPALITY AUTHORIZING SERVICE & CONNECTION. THIS IS REQUIRED FOR PLAN APPROVAL.
UTILITY DISTRICT/MUNICIPALITY NAME: _____
NOTE: SEPTIC SYSTEMS REQUIRE H.C. WASTE WATER REVIEW
H.C. SEPTIC PERMIT/REQUEST NO. _____
NOTE: ALL EXISTING AND PROPOSED UTILITIES MUST BE ACCURATELY SHOWN & LABELED ON THE SITE PLANS.

II. SUBDIVISION PROJECTS
☐ UTILITY DISTRICT/MUNICIPALITY NAME: _____
☐ PRIVATE WATER & WASTE WATER SYSTEMS
☐ PRIVATE WATER & INDIVIDUAL OSSF
☐ INDIVIDUAL WATER WELL & OSSF

NOTE: A COPY OF TCEQ APPROVAL FOR PRIVATE WATER & WASTE WATER SYSTEMS IS REQUIRED FOR PLAN APPROVAL

*NOTE: DEDICATED UNDERGROUND FIRE LINES MUST BE SUBMITTED TO THE HARRIS COUNTY FIRE PROTECTION GROUP FOR REVIEW AND PERMITTING BY THE UNDERGROUND FIRE LINE CONTRACTOR. CIVIL REITEW DOES **NOT** REVIEW OR APPROVE UNDERGROUND FIRE LINES FOR THE FIRE PROTECTION SYSTEMS.*

WASTEWATER TREATMENT PLANTS

H.C. WWTP REVIEW:
IS THE PROPOSED PROJECT A NEW WWTP SITE OR A REHAB/EXPANSION OF AN EXISTING WWTP SITE? *YES* ☐ *NO* ☐
IF YES, IS A HARRIS COUNTY DOMESTIC WASTEWATER TREATMENT PLANT EXPRES REVIEW SHEET ATTACHED AND COMPLETED ACCORDING TO INSTRUCTIONS? *YES* ☐ *NO* ☐
REFER TO:
WWW.ENG.HCTX.NET/PERMITS/WASTEWATER/REGULATIONS-STANDARDS-DETAILS FOR DOMESTIC WWTP ERS FORM

10. PERMITS REQUIRED

DOES THE PROPERTY HAVE ANY VIOLATIONS? IF SO PLEASE PROVIDE ALL VIOLATION NUMBERS: _____

☐ STORM WATER QUALITY
☐ SEPTIC (EXISTING) ☐ SEPTIC (PROPOSED)
☐ CIVIL SITE WORK (PHASE II PERMIT CLASS I (non-floodplain))
CIVIL SITE WORK (PHASE II PERMIT CLASS II (floodplain))
☐ DRIVEWAY WITH CULVERT _____ CURB AND GUTTER _____
☐ BUILDING PERMITS (NO. OF BUILDINGS = _____) ☐ CRITICAL FACILITY
☐ SUBDIVISION INFRASTRUCTURE PHASE II (NO. OF LOTS = _____)
☐ NOTICE OF DETENTION AFFIDAVIT REQUIRED
☐ MUD MAINTENANCE AGREEMENT REQUIRED
NOTES: _____

WORK IN HARRIS COUNTY R.O.W.

☐ UTILITY WORK _____
☐ TURN LANE _____
☐ OTHER CONSTRUCTION _____

NOTES:
A PERMIT IS REQUIRED FOR EACH SCOPE OF WORK ON SITE.
A R.O.W. NOTIFICATION IS REQUIRED FOR EACH SCOPE OF WORK IN HC OR HCFCD ROW.
REFER TO www.eng.hctx.net/permits FOR EACH SCOPE OF WORK IN HC OR IN HCFCD ROW.

BENCHMARK REQUIREMENTS FOR PROPOSED BRIDGES AND OR NEW RESIDENTIAL SUBIDVISIONS

When the County Engineer has determined that a new benchmark will be required to be established for the proposed project, the developer shall be required to install a benchmark per section 8.0, part 2 of the Harris County Infrastructure Regulations.

Is a new Benchmark required for this project? (*to be determined by Harris County*) [__] yes [__] no

If a new Benchmark is required, the proposed benchmark information is shown on sheets ____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

Development constructed or placed in accordance with these plans will comply with all provisions of the Regulations of Harris County, Texas for Floodplain Management.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.
FOUNDATION NOTES: (*Applies to only buildings or building additions requiring a class II permit*)
All water heaters, furnaces, air conditioning units, electrical distribution panels, and any other mechanical or electrical equipment must be elevated in accordance with Section 4.05 of Harris County Floodplain regulations.
Any electrical circuit serving a light switch or outlet located below the base (100-year) flood elevation shall be dropped from above and be on a separate breaker.
All materials used below the (100-year) base flood elevation are on approved FEMA Technical Bulletin 2-08 as Class 5 water-resistant, and approved in accordance with FEMA Technical Bulletin 1-08 for foundation openings.
Critical facilities located in the 0.2% or 500yr floodplain or 1% or 100yr floodplain shall have the lowest floor elevated to 3 feet or more above the 0.2% flood elevation, or 24 inches above the crown of the adjacent road, which ever results in a higher elevation.
Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.
Access routes elevated to or above the level of the base flood shall be provided to all critical facilities to the extent possible.
A completed as-built certificate must be submitted after the structure is complete and before it is occupied.
The County Engineer's Office will post a final inspection notice on the structure once all requirements have been met.
No fill may be used to elevate structures in the 1% or 100yr flood plain. Structures may be constructed on an open foundation, such as piers, or on continuous foundation walls with properly sized and located openings. All foundations are required to be designed by a registered professional engineer.
All structures shall be designed to withstand a three second gust basic wind speed of 120mph.
*Completed ***Elevation Certificates** to be submitted: one at permitting, a second after the slab is poured or sub-floor is installed and before the framing starts, and a third is required once construction is finished. *(PER CURRENT FIRM PANEL) to the Harris County Engineering Department, 10555 Northwest Freeway, Suite 120, Houston, TX 77092*

HARRIS COUNTY ENGINEERING DEPARTMENT - PERMIT OFFICE NOTE:

THE PERMIT MANAGER SIGNATURE REPRESENTS THE FOLLOWING:
- THE COMPLETION OF REVIEW OF THESE PLANS
- INTERPOSE NO OBJECTION TO THE PROPOSED DESIGN ON PRIVATE PROPERTY
- APPROVAL OF WORK IN HARRIS COUNTY MAINTAINED RIGHT OF WAY
- APPROVAL OF WORK IN PROPOSED HARRIS COUNTY RIGHT OF WAY THAT IS TO BE ACCEPTED BY THE COUNTY

HCED SIGNATURE BLOCK:

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A. PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE. I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE PLANS IN THEIR ENTIRETY ARE DESIGNED PER THE HARRIS COUNTY ENGINEERING STANDARDS, REGULATIONS, AND GUIDELINES UNLESS PROVIDED A VARIANCE BY THE COUNTY ENGINEER OR HIS DESIGNEE. SHOULD IT BE DEEMED BY HCED STAFF, THAT THE PLANS DO NOT MEET THE COUNTY'S STANDARDS, REGULATIONS AND GUIDELINES AND DID NOT RECEIVE AN APPROVED VARIANCE, THE APPROVAL OF SAID PLANS BECOMES NULL AND VOID AND THE DESIGN PLANS MUST BE CORRECTED AT NO CHARGE TO THE COUNTY.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 225

CRAG A. PERRY — SIGNATURE
AUGUST 22, 2025 — DATE

SEAL
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Crag Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C. APPROVED DATE

HC PROJECT NO. 0000000000 | HCFCD PROJECT NO. 0000000000 | SHEET NUMBER 13 OF 225

Magnolia Park Lift Station

HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET

VERSION 20.0 MAY 27, 2020

DRAWING NO. G-301

IN REVIEW WITH HCED

PLOTTED: 8/22/2025 1:43 AM PEN TABLE: Z_PUB_WKS_H.ctb
FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\013 G-301.dwg

1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

A. HARRIS COUNTY COMMISSIONER'S PRECINCT:
☐ 1 ☐ 2 ☐ 3 ☐ 4

B. KEY MAP: _____

C. ADDRESS: _____

II. LEGAL DESCRIPTION

A. ACREAGE: _____

B. ☐ SUBDIVISION: _____

☐ SURVEY & ABSTRACT: _____

C. ADJACENT ROADS: _____

III. PLATTING

A. SUBDIVISION PLAT N/A
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT

PLAT NAME: _____

B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

IV. JURISDICTIONS

☐ CITY OF _____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ
☐ UTILITY DISTRICT (NAME)_____

V. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE _____

_____
_____
_____

2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION _____

II. METHODOLOGY

HCFCD PCPM DETENTION METHOD USED:
☐ METHOD 1 (LESS THAN 20 ACRES)
☐ METHOD 2 (20 ACRES TO 640 ACRES)
☐ METHOD 3 (GREATER THAN 640 ACRES)
☐ OTHER _____

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
☐ .65, H.C.F.C.D. CHANNEL, (H.C.F.C.D. UNIT NO.) _____
☐ .75, EXISTING STORM SEWER (OWNER & OPERATOR) _____
☐ 1.00, ROADSIDE DITCH, (OWNER & ROAD NAME) _____
☐ OTHER (OWNER & OPERATOR) _____

IV. STORMWATER DETENTION BASIN INFORMATION

A. HCFCD PCPM SUMMARY TABLE SEE SHEET _____ OF THESE PLANS.

DETENTION BASIN SERVICE AREA		acres	
STORM EVENT	50% EXCEEDANCE (2-YEAR)	10% EXCEEDANCE (10-YEAR)	1% EXCEEDANCE (100-YEAR)
MAXIMUM ALLOWABLE OUTFLOW (PRE-DEVELOPMENT PEAK FLOW)			
MAXIMUM OUTFLOW PROVIDED (PEAK FLOW FROM BASIN)			
LOWEST NATURAL/FINISHED GROUND OR FINISHED FLOOR ELEVATION ESTIMATE			
DESIGN WATER SURFACE ELEVATION			
MINIMUM STORAGE REQUIRED (ac-ft)			
DETENTION STORAGE PROVIDED (ac-ft)			
STORAGE RATE PROVIDED (ac-ft/ac)			
OUTFLOW VELOCITY INTO CHANNEL (ft/sec)			
DRAIN TIME – 1% ONLY (hours)			
EMERGENCY OVERFLOW (TYPE, SIZE, ELEVATION, ETC.)			

B. DETENTION BASIN TO BE MAINTAINED BY _____

C. DETENTION SERVICE AREA MAP ON SHEET _____

D. ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS
VOLUME OF PUMPED 1% EXCEEDANCE STORAGE VOLUME = _____ % OF TOTAL VOLUME
MAXIMUM DESIGN OUTFLOW VELOCITY INTO HCFCD CHANNEL = _____ FT/SEC
DRAIN TIME FOR BASIN = _____ HOURS BASED ON _____ HEAD AND

V. DETENTION PROVIDED IN OTHER PLANS:

HCFCD PROJECT No. _____ DATE SIGNED BY HCFCD: _____
PLAN TITLE _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET _____
ENGINEERING FIRM _____
DETENTION BASIN MAINTAINED BY: _____

VI. FLOW RESTRICTOR SIZE

OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____
RESTRICTOR PLATE DIMENSION: _____

VII. DETENTION PROVIDED BY

☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN
Development constructed or placed in accordance with these plans will comply with all provisions of the designated Floodplain Administrator.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = ____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) _____
☐ DISTURBS <1AC. N/A

*II. APPLICABILITY FOR PERMANENT FEATURES. (Must complete)

EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (Must be verified with plat)

EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A,Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)

EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)

GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT No _____ & SWQ PERMIT No. _____

STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN OR DETAILS(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)

☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, REFORESTRY DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONSAPPEAR ON SHEET(S)_____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: _____
FIRM PANEL(S) DATE: _____
STATUS OF PROPERTY ON MAP
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL_____) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET____

ELEVATION INFORMATION
BENCHMARK USED
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION

☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY

(APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) _____ CUBIC YARDS _____
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) _____ CUBIC YARDS _____
INCLUDING CALCULATIONS)
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD HCFCD ROW

A. BOND/NOTIFICATION INFORMATION
☐ HCFCD WATERSHED _____
☐ HCFCD UNIT No. _____
☐ NUMBER OF OUTFALLS _____
☐ UTILITY CROSSING
☐ ROADWAY BRIDGE/CULVERT CROSSING
☐ FILL ACTIVITY
☐ REHABILITATION OF CHANNEL
☐ MAINTENANCE
☐ TEMPORARY CROSSING
☐ TRAIL (LENGTH) _____
☐ OTHER _____
COST OF WORK IN HCFCD ROW _____

II. USACE ENVIRONMENTAL PERMIT

☐ US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER(S) _____
☐ US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
☐ OTHER
☐ NO PERMITS REQUIRED
EXPLAIN: _____

III. REFERENCE / BASIS OF DETERMINATION

☐ ENVIRONMENTAL CONSULTANT REPORT
BY _____
REPORT TITLE _____
REPORT DATE _____
☐ OTHER _____

NOTES:
1. – III. REQUIRED ON PROJECTS WITH WORK IN A HCFCD CHANNEL. PLEASE REFERENCE SECTION 17 OF THE FLOOD CONTROL DISTRICT POLICY, CRITERIA, AND PROCEDURE MANUAL FOR MORE INFORMATION.

IV. HCFCD STANDARD NOTES: SEE SHEET _____ OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET _____ OF THESE PLANS.

VI. HCFCD ACCESS PLAN: SEE SHEET _____ OF THESE PLANS.

VII. REFER TO THE FOLLOWING PLAN SHEETS: _____
FOR EXISTING AND PROPOSED RIGHT(S) OF WAY INCLUDING DELINEATION AND RECORDING INFORMATION PER HCFCD POLICY, CRITERIA, & PROCEDURE MANUAL (i.e., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (e.g. COH, HCFCD, PUBLIC, TXDOT, ETC.)

6. REPORTS/AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

REPORT TITLE _____
_____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

REPORT TITLE _____
_____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

DESCRIPTION OF VARIANCE _____
_____
DOCUMENT ID #_____
VARIANCE ACCEPTANCE DATE _____

II. AGREEMENT TYPE & No.;

☐ INTERLOCAL (ILA): _____
☐ HCFCD MAINTENANCE _____
☐ TURF ESTABLISHMENT _____
☐ OTHER _____

IN REVIEW WITH HCFCD

HCFCD SIGNATURE BLOCK

PROJECT NAME: _____

ADDRESS: _____

WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION
BY _____
FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY

APPROVED:
BY _____
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY

APPROVED:
BY _____
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY

NO REVIEW REQUIRED:
BY _____
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:
_____
_____
_____
_____
_____

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A. PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE.

ANY VIOLATIONS WILL BE FORWARDED TO THE HARRIS COUNTY DISTRICT ATTORNEY'S OFFICE FOR PROSECUTION.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 225

CRAG A. PERRY (SIGNATURE) AUGUST 22, 2025 (DATE)

DEAL INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes. This document is released for the purpose of interim review under the authority of:
Crag Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY FLOOD CONTROL.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C.F.C.D APPROVED DATE

Magnolia Park Lift Station

HARRIS COUNTY
FLOOD CONTROL DISTRICT
REVIEW SHEET

VERSION 1.0 OCTOBER 2019

DRAWING NO. G-302

HARRIS COUNTY FLOOD CONTROL PROJECT NO. 0000000000

SHEET NUMBER 14 OF 225

PLOTTED: 8/22/2025 1:44 AM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\014 G-302.dwg

1. PAVING

(FOR H.C. PUBLIC R.O.W. ONLY)

	DESIGN THICKNESS OF PAVING	STABILIZED SUBGRADE DEPTH	DESIGN STRENGTH OF CONCRETE	STEEL SPACING		REINFORCE STEEL SIZE
				LONG.	TRANS.	
CONCRETE	(IN.)	(IN.)	(PSI)	(IN.)	(IN.)	(#4 MIN.)

	DESIGN SURFACE COURSE THICKNESS	DESIGN SURFACE COURSE TYPE	DESIGN BASE COURSE THICKNESS	DESIGN BASE COURSE TYPE	STABILIZED SUBGRADE THICKNESS	STABILIZED SUBGRADE TYPE
ASPHALT	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)

DRIVEWAYS (in H.C. ROW only)

I. NUMBER OF DRIVEWAY APPROACHES PROPOSED INCLUDE WIDENING OR REPAVING EXISTING DRIVEWAYS AS WELL AS NEW DRIVEWAYS

DRWY	WIDTH	MATERIAL	CULVERT?	CULVERT LENGTH	NEAREST X-STREET	DIST. TO X-STREET
1						
2						
3						
4						
5						

II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET ____

FIRE APPARATUS ACCESS ROAD

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED DUE TO _____

CURBING

I. ISLANDS, MEDIANS AND ALL AREAS NOT TAKING DIRECT DRIVEWAY ACCESS REQUIRES STANDARD 6" CURBING

II. ☐ STANDARD 6" CURBING PROPOSED
☐ 4" x 12" CURBING PROPOSED EXCEPT AT MEDIANS AND ISLANDS

TRAFFIC CONSIDERATIONS

I. MEDIAN CUTS
☐ NO MEDIAN CUT OR RELOCATION IS PROPOSED
☐ MEDIAN MODIFICATIONS ARE SHOWN ON SHEET _____

II. LEFT / RIGHT TURN LANE
☐ NO LEFT / RIGHT TURN LANE IS PROPOSED
☐ LEFT / RIGHT TURN LANE IS SHOWN ON SHEET _____

III. TRAFFIC CONTROL PLAN
☐ NO WORK IN THE RIGHT OF WAY IS PROPOSED THAT WOULD INTERFERE WITH TRAFFIC FLOW
☐ TRAFFIC CONTROL SHOWN ON SHEET _____

IV. TRAFFIC SIGNAL
☐ NO TRAFFIC SIGNAL IS EXISTING / PROPOSED
☐ EXISTING TRAFFIC SIGNAL DEVICES (T.C. BOXES AND LOOPS) SHOWN ON SHEET _____
☐ PROPOSED TRAFFIC SIGNAL (BY OTHERS)

V. TRAFFIC IMPACT ANALYSIS
☐ NO TRAFFIC IMPACT ANALYSIS IS REQUIRED
☐ TRAFFIC IMPACT ANALYSIS HAS BEEN APPROVED ON DATE:_____
PLAN TITLE: _____
HCPID PROJECT NO.: _____

5. DESCRIPTION OF PROPERTY

I. LEGAL DESCRIPTION
A. ACREAGE: _____
B. ☐ SUBDIVISION: _____
☐ SURVEY & ABSTRACT: _____
C. ADJACENT ROADS: _____

II. PLATTING
A. SUBDIVISION PLAT
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT
PLAT NAME:
B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

III. JURISDICTIONS
☐ CITY OF_____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF_____
☐ NO ETJ

IV. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE _____

V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.)
☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

NOTE: ALL APPROVED, FINAL PLATS AND ASSOCIATED CPC101 FORMS MUST BE INCLUDED WITH PLAN SUBMITTAL.

☐ CONFORMING SUBDIVISION
☐ NON-CONFORMING SUBDIVISION
☐ PARTIALLY NON-CONFORMING SUBDIVISION

2. RESIDENTIAL / SUBDIVISION DRAINAGE

I. PROPOSED DRAINAGE SYSTEM TYPE
☐ STORM SEWER
☐ ROADSIDE DITCH
☐ LOW IMPACT DEVELOPMENT (LID)

II. DESIGN METHOD USED
☐ CITY OF HOUSTON _____ YEAR FREQUENCY
☐ OTHER: _____

III. DRAINAGE SYSTEM OUTFALLS DIRECTLY TO EXISTING
☐ DETENTION POND (APPROVED H.C. PRJ NO.): _____
DETENTION POND MAINTAINED BY: _____
☐ HCFCD DRAINAGE DITCH UNIT NO.: _____
☐ H.C. ROADSIDE DITCH (ROAD NAME): _____
☐ H.C. STORM SEWER (APPROVED H.C. PRJ NO.): _____

IV. H.C. OUTFALL CALCULATIONS
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

V. DETENTION PROVIDED BY
☐ DETENTION BASIN IS PART THIS PLAN SET. SERVICE AREA MAP IS ON SHEET ___
☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

PROPOSED STORM SEWER IS SUBMERGED (AGREEMENT MUST BE PROVIDED).
STATIC W.S.E. @ OUTFALL IS _____.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = _____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

6. STORMWATER QUALITY

I. SWPPP: CONSTRUCTION MEASURES. (Complete for ALL projects)
☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S)_____
☐ DISTURBS <1AC. N/A

II. APPLICABILITY FOR PERMANENT FEATURES. (must be completed on all projects)
EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES (must be verified with plat)
EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A, Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)
EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)
GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT NO. _____ & SWQ PERMIT NO. _____
STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN ON SHEET(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)
☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY) DETAILS AND CALCULATIONS APPEAR ON SHEET(S)_____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

3. COMMERCIAL / OTHER SITE DRAINAGE

I. PROPOSED DRAINAGE AREA
☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (NET NEW DEVELOPED AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)

II. DETENTION VOLUME
NEW AREA_____ X _*_ =_____ACRE FEET
DETENTION REQUIRED
*☐ .65 (CHANNEL)
*☐ .75 (STM SWR)
*☐ 1.00 (RD. DITCH)
*☐ OTHER: _____
PROPOSED DETENTION VOLUME = _____ ACRE FEET
PROPOSED DETENTION VOLUME CALCULATIONS ARE SHOWN ON SHEET _____
DETENTION VOLUME PROVIDED BY EXISTING DETENTION POND
APPROVED H.C. PROJECT NO.: _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET ____

III. OUTFALL
OUTFALL TO ☐ H.C. ROADSIDE DITCH
☐ EXISTING H.C. STORM SEWER
☐ OTHER _____
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

IV. PUMPED DETENTION FACILITIES
VOLUME THAT GRAVITY FLOWS:_____ACRE FEET
VOLUME THAT IS PUMPED:_____ACRE FEET
ENTRANCE VELOCITY INTO ROADSIDE DITCH OR STORM SEWER: _____
PUMP SPECIFICATIONS AND AUTOMATIC SHUTOFF PLAN FOR ROADSIDE DITCH & STORM SEWER OUTFALLS APPEAR ON SHEET _____

V. FLOW RESTRICTOR SIZE
OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____

NOTE: ALL ROADSIDE DITCH OUTFALLS REQUIRE EROSION CONTROL MEASURES. RIPRAP IS NOT ALLOWED AS AN EROSION CONTROL MEASURE IN HARRIS COUNTY ROW. ALL PUMPED DETENTION OUTFALLS TO ROADSIDE DITCHES REQUIRE MANHOLE W/ LEADS.

7. FLOOD PLAIN STATUS

I. GENERAL INFORMATION
FIRM PANEL NUMBER FOR PROJECT: _____
FIRM PANEL DATE: _____
STATUS OF PROPERTY ON MAP:
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN SHADED ZONE "X", ZONE A, OR SHADED ZONE "X"
☐ PROPOSED FLOODPLAIN BOUNDARIN SHOWN ON CONSTRUCTION DRAWINGS
(LAYOUT PG. NO. _____) (1% ANNUAL CHANCE FLOOD LEVEL_____)
(0.2% ANNUAL CHANCE FLOOD LEVEL_____)
☐ PROPERTY REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA
CASE NO._____ ☐ PROPOSED FLOODPLAIN IS SHOWN ON SHEET_____
ELEVATION INFORMATION
BENCHMARK USED:
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION
☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FLOODPLAIN AS DELINEATED BY FIRM PANEL).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

IV. ☐LOMR REQUIRED ☐CLOMR REQUIRED VERIFIED BY: _____

8. CURB RAMPS

A. ARE CURB RAMPS THAT CONNECT TO PUBLIC STREETS PROPOSED IN THIS SET OF PLANS? ☐ YES ☐ NO

9. LANDSCAPING

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

4. WATER AND WASTEWATER

I. COMMERCIAL PROJECTS
DOES PROPERTY HAVE EXISTING AND/OR PROPOSED UTILITIES?
☐ YES ☐ NO
IF YES, CHECK THE BOX THAT APPLIES TO THIS PROJECT
☐ PUBLIC WATER & SANITARY
☐ PRIVATE WATER WELL & SEPTIC SYSTEM
☐ PUBLIC WATER & PRIVATE SEPTIC SYSTEM
☐ PRIVATE WATER WELL & PUBLIC SANITARY

NOTE: PUBLIC UTILITIES REQUIRE A LETTER FROM THE DISTRICT/ MUNICIPALITY AUTHORIZING SERVICE & CONNECTION. THIS IS REQUIRED FOR PLAN APPROVAL.
UTILITY DISTRICT/MUNICIPALITY NAME: _____
NOTE: SEPTIC SYSTEMS REQUIRE H.C. WASTE WATER REVIEW
H.C. SEPTIC PERMIT/REQUEST NO. _____
NOTE: ALL EXISTING AND PROPOSED UTILITIES MUST BE ACCURATELY SHOWN & LABELED ON THE SITE PLANS.

II. SUBDIVISION PROJECTS
☐ UTILITY DISTRICT/MUNICIPALITY NAME: _____
☐ PRIVATE WATER & WASTE WATER SYSTEMS
☐ PRIVATE WATER & INDIVIDUAL OSSF
☐ INDIVIDUAL WATER WELL & OSSF

NOTE: A COPY OF TCEQ APPROVAL FOR PRIVATE WATER & WASTE WATER SYSTEMS IS REQUIRED FOR PLAN APPROVAL

*NOTE: DEDICATED UNDERGROUND FIRE LINES MUST BE SUBMITTED TO THE HARRIS COUNTY FIRE PROTECTION GROUP FOR REVIEW AND PERMITTING BY THE UNDERGROUND FIRE LINE CONTRACTOR. CIVIL REITEW DOES **NOT** REVIEW OR APPROVE UNDERGROUND FIRE LINES FOR THE FIRE PROTECTION SYSTEMS.*

WASTEWATER TREATMENT PLANTS

H.C. WWTP REVIEW:
IS THE PROPOSED PROJECT A NEW WWTP SITE OR A REHAB/EXPANSION OF AN EXISTING WWTP SITE? *YES* ☐ *NO* ☐
IF YES, IS A HARRIS COUNTY DOMESTIC WASTEWATER TREATMENT PLANT EXPRES REVIEW SHEET ATTACHED AND COMPLETED ACCORDING TO INSTRUCTIONS? *YES* ☐ *NO* ☐
REFER TO:
WWW.ENG.HCTX.NET/PERMITS/WASTEWATER/REGULATIONS-STANDARDS-DETAILS FOR DOMESTIC WWTP ERS FORM

10. PERMITS REQUIRED

DOES THE PROPERTY HAVE ANY VIOLATIONS? IF SO PLEASE PROVIDE ALL VIOLATION NUMBERS. _____

☐ STORM WATER QUALITY
☐ SEPTIC (EXISTING) ☐ SEPTIC (PROPOSED)
☐ CIVIL SITE WORK (PHASE II PERMIT CLASS I (non-floodplain))
CIVIL SITE WORK (PHASE II PERMIT CLASS II (floodplain))
☐ DRIVEWAY WITH CULVERT _____ CURB AND GUTTER _____
☐ BUILDING PERMITS (NO. OF BUILDINGS = _____) ☐ CRITICAL FACILITY
☐ SUBDIVISION INFRASTRUCTURE PHASE II (NO. OF LOTS = _____)
☐ NOTICE OF DETENTION AFFIDAVIT REQUIRED
☐ MUD MAINTENANCE AGREEMENT REQUIRED
NOTES: _____

WORK IN HARRIS COUNTY R.O.W.
☐ UTILITY WORK _____
☐ TURN LANE _____
☐ OTHER CONSTRUCTION _____

NOTES:
A PERMIT IS REQUIRED FOR EACH SCOPE OF WORK ON SITE.
A R.O.W. NOTIFICATION IS REQUIRED FOR EACH SCOPE OF WORK IN HC OR HCFCD ROW.
REFER TO www.eng.hctx.net/permits FOR EACH SCOPE OF WORK IN HC OR IN HCFCD ROW.

BENCHMARK REQUIREMENTS FOR PROPOSED BRIDGES AND OR NEW RESIDENTIAL SUBIDIVSIONS

When the County Engineer has determined that a new benchmark will be required to be established for the proposed project, the developer shall be required to install a benchmark per section 8.0, part 2 of the Harris County Infrastructure Regulations.

Is a new Benchmark required for this project? (*to be determined by Harris County*) [__] yes [__] no

If a new Benchmark is required, the proposed benchmark information is shown on sheets ____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

Development constructed or placed in accordance with these plans will comply with all provisions of the Regulations of Harris County, Texas for Floodplain Management.

No net fill is allowed in the flood plain and no fill is allowed in the floodway.

FOUNDATION NOTES: (*Applies to only buildings or building additions requiring a class II permit*)

All water heaters, furnaces, air conditioning units, electrical distribution panels, and any other mechanical or electrical equipment must be elevated in accordance with Section 4.05 of Harris County Floodplain regulations.

Any electrical circuit serving a light switch or outlet located below the base (100-year) flood elevation shall be dropped from above and be on a separate breaker.

All materials used below the (100-year) base flood elevation are on approved FEMA Technical Bulletin 2-08 as Class 5 water-resistant, and approved in accordance with FEMA Technical Bulletin 1-08 for foundation openings.

Critical facilities located in the 0.2% or 500yr floodplain or 1% or 100yr floodplain shall have the lowest floor elevated to 3 feet or more above the 0.2% flood elevation, or 24 inches above the crown of the adjacent road, which ever results in a higher elevation.

Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.

Access routes elevated to or above the level of the base flood shall be provided to all critical facilities to the extent possible.

A completed as-built certificate must be submitted after the structure is complete and before it is occupied.

The County Engineer's Office will post a final inspection notice on the structure once all requirements have been met.

No fill may be used to elevate structures in the 1% or 100yr flood plain. Structures may be constructed on an open foundation, such as piers, or on continuous foundation walls with properly sized and located openings. All foundations are required to be designed by a registered professional engineer.

All structures shall be designed to withstand a three second gust basic wind speed of 120mph.

*Completed ***Elevation Certificates** to be submitted: one at permitting, a second after the slab is poured or sub-floor is installed and before the framing starts, and a third is required once construction is finished. *(PER CURRENT FIRM PANEL) to the Harris County Engineering Department, 10555 Northwest Freeway, Suite 120, Houston, TX 77092*

HARRIS COUNTY ENGINEERING DEPARTMENT - PERMIT OFFICE NOTE:

THE PERMIT MANAGER SIGNATURE REPRESENTS THE FOLLOWING:
- THE COMPLETION OF REVIEW OF THESE PLANS
- INTERPOSE NO OBJECTION TO THE PROPOSED DESIGN ON PRIVATE PROPERTY
- APPROVAL OF WORK IN HARRIS COUNTY MAINTAINED RIGHT OF WAY
- APPROVAL OF WORK IN PROPOSED HARRIS COUNTY RIGHT OF WAY THAT IS TO BE ACCEPTED BY THE COUNTY

HCED SIGNATURE BLOCK:

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A. PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE. I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE PLANS IN THEIR ENTIRETY ARE DESIGNED PER THE HARRIS COUNTY ENGINEERING STANDARDS, REGULATIONS, AND GUIDELINES UNLESS PROVIDED A VARIANCE BY THE COUNTY ENGINEER OR HIS DESIGNEE. SHOULD IT BE DEEMED BY HCED STAFF, THAT THE PLANS DO NOT MEET THE COUNTY'S STANDARDS, REGULATIONS AND GUIDELINES AND DID NOT RECEIVE AN APPROVED VARIANCE, THE APPROVAL OF SAID PLANS BECOMES NULL AND VOID AND THE DESIGN PLANS MUST BE CORRECTED AT NO CHARGE TO THE COUNTY.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 225

CRAG A. PERRY — SIGNATURE
AUGUST 22, 2025 — DATE

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY.

SEAL
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Crag Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C. APPROVED DATE

HC PROJECT NO. 0000000000 | HCFCD PROJECT NO. 0000000000 | SHEET NUMBER 15 OF 225

Pine Prairie Lift Station

VERSION 20.0 MAY 27, 2020

HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET

DRAWING NO. G-401

IN REVIEW
NOT APPROVED

PLOTTED: 8/22/2025 1:44 AM PEN TABLE: Z_PUB_WKS_H.ctb
FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\015 G-401.dwg

1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

A. HARRIS COUNTY COMMISSIONER'S PRECINCT:
☐ 1 ☐ 2 ☐ 3 ☐ 4

B. KEY MAP: _____

C. ADDRESS: _____

II. LEGAL DESCRIPTION

A. ACREAGE: _____

B. ☐ SUBDIVISION: _____

☐ SURVEY & ABSTRACT: _____

C. ADJACENT ROADS: _____

III. PLATTING

A. SUBDIVISION PLAT N/A
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT

PLAT NAME: _____

B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

IV. JURISDICTIONS

☐ CITY OF _____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ
☐ UTILITY DISTRICT (NAME)_____

V. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE_____

_____
_____
_____

2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION _____

II. METHODOLOGY

HCFCD PCPM DETENTION METHOD USED:
☐ METHOD 1 (LESS THAN 20 ACRES)
☐ METHOD 2 (20 ACRES TO 640 ACRES)
☐ METHOD 3 (GREATER THAN 640 ACRES)
☐ OTHER _____

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
☐ .65, H.C.F.C.D. CHANNEL, (H.C.F.C.D. UNIT NO.) _____
☐ .75, EXISTING STORM SEWER (OWNER & OPERATOR) _____
☐ 1.00, ROADSIDE DITCH, (OWNER & ROAD NAME) _____
☐ OTHER (OWNER & OPERATOR) _____

IV. STORMWATER DETENTION BASIN INFORMATION

A. HCFCD PCPM SUMMARY TABLE SEE SHEET _____ OF THESE PLANS.

DETENTION BASIN SERVICE AREA		acres	
STORM EVENT	50% EXCEEDANCE (2-YEAR)	10% EXCEEDANCE (10-YEAR)	1% EXCEEDANCE (100-YEAR)
MAXIMUM ALLOWABLE OUTFLOW (PRE-DEVELOPMENT PEAK FLOW)			
MAXIMUM OUTFLOW PROVIDED (PEAK FLOW FROM BASIN)			
LOWEST NATURAL/FINISHED GROUND OR FINISHED FLOOR ELEVATION ESTIMATE			
DESIGN WATER SURFACE ELEVATION			
MINIMUM STORAGE REQUIRED (ac-ft)			
DETENTION STORAGE PROVIDED (ac-ft)			
STORAGE RATE PROVIDED (ac-ft/ac)			
OUTFLOW VELOCITY INTO CHANNEL (ft/sec)			
DRAIN TIME – 1% ONLY (hours)			
EMERGENCY OVERFLOW (TYPE, SIZE, ELEVATION, ETC.)			

B. DETENTION BASIN TO BE MAINTAINED BY _____

C. DETENTION SERVICE AREA MAP ON SHEET _____

D. ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS
VOLUME OF PUMPED 1% EXCEEDANCE STORAGE VOLUME = _____ % OF TOTAL VOLUME
MAXIMUM DESIGN OUTFLOW VELOCITY INTO HCFCD CHANNEL = _____ FT/SEC
DRAIN TIME FOR BASIN = _____ HOURS BASED ON _____ HEAD AND

V. DETENTION PROVIDED IN OTHER PLANS:

HCFCD PROJECT No. _____ DATE SIGNED BY HCFCD: _____
PLAN TITLE _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET _____
ENGINEERING FIRM _____
DETENTION BASIN MAINTAINED BY: _____

VI. FLOW RESTRICTOR SIZE

OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____
RESTRICTOR PLATE DIMENSION: _____

VII. DETENTION PROVIDED BY

☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN
Development constructed or placed in accordance with these plans will comply with all provisions of the designated Floodplain Administrator.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = ____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) _____
☐ DISTURBS <1AC. N/A

*II. APPLICABILITY FOR PERMANENT FEATURES. (Must complete)

EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (Must be verified with plat)

EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A,Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)

EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)

GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT No _____ & SWQ PERMIT No. _____
STORMWATER POLLUTION PREVENTION PLAN:
☐ SITE PLAN OR DETAILS(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)

☐ DETENTATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, ETC.) _____
☐ BIO-FORESTRY DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONSAPPEAR ON SHEET(S)_____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: _____
FIRM PANEL(S) DATE: _____
STATUS OF PROPERTY ON MAP
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL_____) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET____

ELEVATION INFORMATION
BENCHMARK USED
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION

☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY

(APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) ____ CUBIC YARDS _____
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) ____ CUBIC YARDS _____
INCLUDING CALCULATIONS)
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD HCFCD ROW

A. BOND/NOTIFICATION INFORMATION
☐ HCFCD WATERSHED _____
☐ HCFCD UNIT No. _____
☐ NUMBER OF OUTFALLS _____
☐ UTILITY CROSSING
☐ ROADWAY BRIDGE/CULVERT CROSSING
☐ FILL ACTIVITY
☐ REHABILITATION OF CHANNEL
☐ MAINTENANCE
☐ TEMPORARY CROSSING
☐ TRAIL (LENGTH) _____
☐ OTHER _____
COST OF WORK IN HCFCD ROW _____

II. USACE ENVIRONMENTAL PERMIT

☐ US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER(S) _____
☐ US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
☐ OTHER
☐ NO PERMITS REQUIRED
EXPLAIN: _____

III. REFERENCE / BASIS OF DETERMINATION

☐ ENVIRONMENTAL CONSULTANT REPORT
BY _____
REPORT TITLE _____
REPORT DATE _____
☐ OTHER _____

NOTES:
1. – III. REQUIRED ON PROJECTS WITH WORK IN A HCFCD CHANNEL. PLEASE REFERENCE SECTION 17 OF THE FLOOD CONTROL DISTRICT POLICY, CRITERIA, AND PROCEDURE MANUAL FOR MORE INFORMATION.

IV. HCFCD STANDARD NOTES: SEE SHEET _____ OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET _____ OF THESE PLANS.

VI. HCFCD ACCESS PLAN: SEE SHEET _____ OF THESE PLANS.

VII. REFER TO THE FOLLOWING PLAN SHEETS: _____
FOR EXISTING AND PROPOSED RIGHT(S) OF WAY INCLUDING DELINEATION AND RECORDING INFORMATION PER HCFCD POLICY, CRITERIA, & PROCEDURE MANUAL (i.e., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (e.g. COH, HCFCD, PUBLIC, TXDOT, ETC.)

6. REPORTS/AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

REPORT TITLE _____
_____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

REPORT TITLE _____
_____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

DESCRIPTION OF VARIANCE _____
_____
DOCUMENT ID #_____
VARIANCE ACCEPTANCE DATE _____

II. AGREEMENT TYPE & No.;

☐ INTERLOCAL (ILA): _____
☐ HCFCD MAINTENANCE _____
☐ TURF ESTABLISHMENT _____
☐ OTHER _____

IN REVIEW WITH HCFCD

HCFCD SIGNATURE BLOCK

PROJECT NAME: _____

ADDRESS: _____

WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION
BY _____
FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY

APPROVED:
BY _____
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY

APPROVED:
BY _____
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY

NO REVIEW REQUIRED:
BY _____
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:
_____
_____
_____
_____
_____

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A. PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE.

ANY VIOLATIONS WILL BE FORWARDED TO THE HARRIS COUNTY DISTRICT ATTORNEY'S OFFICE FOR PROSECUTION.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 225

CRAG A. PERRY (SIGNATURE) AUGUST 22, 2025 (DATE)

SEAL
INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Crag Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY FLOOD CONTROL.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C.F.C.D APPROVED DATE

Pine Prairie Lift Station

HARRIS COUNTY
FLOOD CONTROL DISTRICT
REVIEW SHEET

VERSION 1.0 OCTOBER 2019

DRAWING NO. G-402

HARRIS COUNTY FLOOD CONTROL PROJECT NO. 0000000000

SHEET NUMBER 16 OF 225

PLOTTED: 8/22/2025 1:44 AM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\016 G-402.dwg

1. PAVING

(FOR H.C. PUBLIC R.O.W. ONLY)

CONCRETE	DESIGN THICKNESS OF PAVING	STABILIZED SUBGRADE DEPTH	DESIGN STRENGTH OF CONCRETE	STEEL SPACING		REINFORCE STEEL SIZE
				LONG.	TRANS.	
	(IN.)	(IN.)	(PSI)	(IN.)	(IN.)	(#4 MIN.)

ASPHALT	DESIGN SURFACE COURSE THICKNESS	DESIGN SURFACE COURSE TYPE	DESIGN BASE COURSE THICKNESS	DESIGN BASE COURSE TYPE	STABILIZED SUBGRADE THICKNESS	STABILIZED SUBGRADE TYPE
	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)	(IN.)	(MATERIAL)

DRIVEWAYS (in H.C. ROW only)

I. NUMBER OF DRIVEWAY APPROACHES PROPOSED INCLUDE WIDENING OR REPAVING EXISTING DRIVEWAYS AS WELL AS NEW DRIVEWAYS

DRWY	WIDTH	MATERIAL	CULVERT?	CULVERT LENGTH	NEAREST X-STREET	DIST. TO X-STREET
1						
2						
3						
4						
5						

II. HARRIS COUNTY STANDARD DRIVEWAY DETAIL APPEARS ON SHEET ____

FIRE APPARATUS ACCESS ROAD

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED DUE TO _____

CURBING

I. ISLANDS, MEDIANS AND ALL AREAS NOT TAKING DIRECT DRIVEWAY ACCESS REQUIRES STANDARD 6" CURBING

II. ☐ STANDARD 6" CURBING PROPOSED
☐ 4" x 12" CURBING PROPOSED EXCEPT AT MEDIANS AND ISLANDS

TRAFFIC CONSIDERATIONS

I. MEDIAN CUTS
☐ NO MEDIAN CUT OR RELOCATION IS PROPOSED
☐ MEDIAN MODIFICATIONS ARE SHOWN ON SHEET _____

II. LEFT / RIGHT TURN LANE
☐ NO LEFT / RIGHT TURN LANE IS PROPOSED
☐ LEFT / RIGHT TURN LANE IS SHOWN ON SHEET _____

III. TRAFFIC CONTROL PLAN
☐ NO WORK IN THE RIGHT OF WAY IS PROPOSED THAT WOULD INTERFERE WITH TRAFFIC FLOW
☐ TRAFFIC CONTROL SHOWN ON SHEET _____

IV. TRAFFIC SIGNAL
☐ NO TRAFFIC SIGNAL IS EXISTING / PROPOSED
☐ EXISTING TRAFFIC SIGNAL DEVICES (T.C. BOXES AND LOOPS) SHOWN ON SHEET _____
☐ PROPOSED TRAFFIC SIGNAL (BY OTHERS)

V. TRAFFIC IMPACT ANALYSIS
☐ NO TRAFFIC IMPACT ANALYSIS IS REQUIRED
☐ TRAFFIC IMPACT ANALYSIS HAS BEEN APPROVED ON DATE:_____
PLAN TITLE: _____
HCPID PROJECT NO.: _____

5. DESCRIPTION OF PROPERTY

I. LEGAL DESCRIPTION
A. ACREAGE: _____
B. ☐ SUBDIVISION: _____
☐ SURVEY & ABSTRACT: _____
C. ADJACENT ROADS: _____

II. PLATTING
A. SUBDIVISION PLAT
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT
PLAT NAME:
B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

III. JURISDICTIONS
☐ CITY OF_____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF_____
☐ NO ETJ

IV. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE _____

V. UNOBSTRUCTED VISIBILITY EASEMENT (U.V.E.)
☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

NOTE: ALL APPROVED, FINAL PLATS AND ASSOCIATED CPC101 FORMS MUST BE INCLUDED WITH PLAN SUBMITTAL.

☐ CONFORMING SUBDIVISION
☐ NON-CONFORMING SUBDIVISION
☐ PARTIALLY NON-CONFORMING SUBDIVISION

2. RESIDENTIAL / SUBDIVISION DRAINAGE

I. PROPOSED DRAINAGE SYSTEM TYPE
☐ STORM SEWER
☐ ROADSIDE DITCH
☐ LOW IMPACT DEVELOPMENT (LID)

II. DESIGN METHOD USED
☐ CITY OF HOUSTON _____ YEAR FREQUENCY
☐ OTHER: _____

III. DRAINAGE SYSTEM OUTFALLS DIRECTLY TO EXISTING
☐ DETENTION POND (APPROVED H.C. PRJ NO.): _____
DETENTION POND MAINTAINED BY: _____
☐ HCFCD DRAINAGE DITCH UNIT NO.: _____
☐ H.C. ROADSIDE DITCH (ROAD NAME): _____
☐ H.C. STORM SEWER (APPROVED H.C. PRJ NO.): _____

IV. H.C. OUTFALL CALCULATIONS
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

V. DETENTION PROVIDED BY
☐ DETENTION BASIN IS PART THIS PLAN SET. SERVICE AREA MAP IS ON SHEET ___
☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

PROPOSED STORM SEWER IS SUBMERGED (AGREEMENT MUST BE PROVIDED).
STATIC W.S.E. @ OUTFALL IS _____.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = _____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

6. STORMWATER QUALITY

I. SWPPP: CONSTRUCTION MEASURES. (Complete for ALL projects)
☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S)_____
☐ DISTURBS <1AC. N/A

II. APPLICABILITY FOR PERMANENT FEATURES. (must be completed on all projects)
EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES (must be verified with plat)
EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A, Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)
EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)
GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT NO. _____ & SWQ PERMIT NO. _____
STORMWATER QUALITY MANAGEMENT PLAN:
☐ SITE PLAN ON SHEET(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)
☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, URBAN FORESTRY) DETAILS AND CALCULATIONS APPEAR ON SHEET(S)_____
☐ POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

3. COMMERCIAL / OTHER SITE DRAINAGE

I. PROPOSED DRAINAGE AREA
☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (NET NEW DEVELOPED AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)

II. DETENTION VOLUME
NEW AREA_____ X _*_ =_____ACRE FEET
DETENTION REQUIRED
*☐ .65 (CHANNEL)
*☐ .75 (STM SWR)
*☐ 1.00 (RD. DITCH)
*☐ OTHER: _____
PROPOSED DETENTION VOLUME = _____ ACRE FEET
PROPOSED DETENTION VOLUME CALCULATIONS ARE SHOWN ON SHEET _____
DETENTION VOLUME PROVIDED BY EXISTING DETENTION POND
APPROVED H.C. PROJECT NO.: _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET ____

III. OUTFALL
OUTFALL TO ☐ H.C. ROADSIDE DITCH
☐ EXISTING H.C. STORM SEWER
☐ OTHER _____
☐ ROADSIDE DITCH OUTFALL:
ALLOWABLE OUTFALL RATE: 0.0027 x _____ LF Frontage = _____ (CFS)
PROPOSED OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___
☐ STORM SEWER OUTFALL
CAPACITY ALLOCATED TO TRACT FROM D. A. MAP: _____ (CFS)
FROM DRAINAGE AREA MAP DATED: _____
PREPARED BY: _____
APPROVED H.C. PROJECT NO.: _____
ACTUAL OUTFALL RATE: _____ (CFS), CALCULATIONS PROVIDED ON SHEET ___

IV. PUMPED DETENTION FACILITIES
VOLUME THAT GRAVITY FLOWS:_____ACRE FEET
VOLUME THAT IS PUMPED:_____ACRE FEET
ENTRANCE VELOCITY INTO ROADSIDE DITCH OR STORM SEWER: _____
PUMP SPECIFICATIONS AND AUTOMATIC SHUTOFF PLAN FOR ROADSIDE DITCH & STORM SEWER OUTFALLS APPEAR ON SHEET _____

V. FLOW RESTRICTOR SIZE
OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____

NOTE: ALL ROADSIDE DITCH OUTFALLS REQUIRE EROSION CONTROL MEASURES. RIPRAP IS NOT ALLOWED AS AN EROSION CONTROL MEASURE IN HARRIS COUNTY ROW. ALL PUMPED DETENTION OUTFALLS TO ROADSIDE DITCHES REQUIRE MANHOLE W/ LEADS.

7. FLOOD PLAIN STATUS

I. GENERAL INFORMATION
FIRM PANEL NUMBER FOR PROJECT: _____
FIRM PANEL DATE: _____
STATUS OF PROPERTY ON MAP:
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN SHADED ZONE "X", ZONE A, OR SHADED ZONE "X"
☐ 100 YEAR FLOODPLAIN BOUNDARY SHOWN ON SURVEY (OR DRAINAGE LAYOUT PG. NO. _____) (1% ANNUAL CHANCE FLOOD LEVEL_____)
☐ FLOODWAY (0.2% ANNUAL CHANCE FLOOD LEVEL_____)
☐ FLOODWAY REMOVED FROM SURROUNDING AREA BY LOMR, LOMR-F, LOMA
CASE NO._____ (0.2% ANNUAL CHANCE FLOOD LEVEL_____)
☐ PROPOSED FLOODPLAIN IS SHOWN ON SHEET_____
ELEVATION INFORMATION
BENCHMARK USED:
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION
☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FLOODPLAIN AS DELINEATED BY FIRM PANEL).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION _____ (2001 ADJ.) _____ CUBIC YARDS
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

IV. ☐LOMR REQUIRED ☐CLOMR REQUIRED VERIFIED BY: _____

8. CURB RAMPS

A. ARE CURB RAMPS THAT CONNECT TO PUBLIC STREETS PROPOSED IN THIS SET OF PLANS? ☐ YES ☐ NO

9. LANDSCAPING

☐ REQUIRED AND SHOWN ON SHEET(S) _____
☐ NOT REQUIRED

4. WATER AND WASTEWATER

I. COMMERCIAL PROJECTS
DOES PROPERTY HAVE EXISTING AND/OR PROPOSED UTILITIES?
☐ YES ☐ NO
IF YES, CHECK THE BOX THAT APPLIES TO THIS PROJECT
☐ PUBLIC WATER & SANITARY
☐ PRIVATE WATER WELL & SEPTIC SYSTEM
☐ PUBLIC WATER & PRIVATE SEPTIC SYSTEM
☐ PRIVATE WATER WELL & PUBLIC SANITARY

NOTE: PUBLIC UTILITIES REQUIRE A LETTER FROM THE DISTRICT/ MUNICIPALITY AUTHORIZING SERVICE & CONNECTION. THIS IS REQUIRED FOR PLAN APPROVAL.
UTILITY DISTRICT/MUNICIPALITY NAME: _____
NOTE: SEPTIC SYSTEMS REQUIRE H.C. WASTE WATER REVIEW
H.C. SEPTIC PERMIT/REQUEST NO. _____
NOTE: ALL EXISTING AND PROPOSED UTILITIES MUST BE ACCURATELY SHOWN & LABELED ON THE SITE PLANS.

II. SUBDIVISION PROJECTS
☐ UTILITY DISTRICT/MUNICIPALITY NAME: _____
☐ PRIVATE WATER & WASTE WATER SYSTEMS
☐ PRIVATE WATER & INDIVIDUAL OSSF
☐ INDIVIDUAL WATER WELL & OSSF

NOTE: A COPY OF TCEQ APPROVAL FOR PRIVATE WATER & WASTE WATER SYSTEMS IS REQUIRED FOR PLAN APPROVAL

*NOTE: DEDICATED UNDERGROUND FIRE LINES MUST BE SUBMITTED TO THE HARRIS COUNTY FIRE PROTECTION GROUP FOR REVIEW AND PERMITTING BY THE UNDERGROUND FIRE LINE CONTRACTOR. CIVIL REITEW DOES **NOT** REVIEW OR APPROVE UNDERGROUND FIRE LINES FOR THE FIRE PROTECTION SYSTEMS.*

WASTEWATER TREATMENT PLANTS

H.C. WWTP REVIEW:
IS THE PROPOSED PROJECT A NEW WWTP SITE OR A REHAB/EXPANSION OF AN EXISTING WWTP SITE? *YES* ☐ *NO* ☐
IF YES, IS A HARRIS COUNTY DOMESTIC WASTEWATER TREATMENT PLANT EXPRES REVIEW SHEET ATTACHED AND COMPLETED ACCORDING TO INSTRUCTIONS? *YES* ☐ *NO* ☐
REFER TO:
WWW.ENG.HCTX.NET/PERMITS/WASTEWATER/REGULATIONS-STANDARDS-DETAILS FOR DOMESTIC WWTP ERS FORM

10. PERMITS REQUIRED

DOES THE PROPERTY HAVE ANY VIOLATIONS? IF SO PLEASE PROVIDE ALL VIOLATION NUMBERS. _____

☐ STORM WATER QUALITY
☐ SEPTIC (EXISTING) ☐ SEPTIC (PROPOSED)
☐ CIVIL SITE WORK (PHASE II PERMIT CLASS I (non-floodplain))
CIVIL SITE WORK (PHASE II PERMIT CLASS II (floodplain))
☐ DRIVEWAY WITH CULVERT _____ CURB AND GUTTER _____
☐ BUILDING PERMITS (NO. OF BUILDINGS = _____) ☐ CRITICAL FACILITY
☐ SUBDIVISION INFRASTRUCTURE PHASE II (NO. OF LOTS = _____)
☐ NOTICE OF DETENTION AFFIDAVIT REQUIRED
☐ MUD MAINTENANCE AGREEMENT REQUIRED
NOTES: _____

WORK IN HARRIS COUNTY R.O.W.
☐ UTILITY WORK _____
☐ TURN LANE _____
☐ OTHER CONSTRUCTION _____

NOTES:
A PERMIT IS REQUIRED FOR EACH SCOPE OF WORK ON SITE.
A R.O.W. NOTIFICATION IS REQUIRED FOR EACH SCOPE OF WORK IN HC OR HCFCD ROW.
REFER TO www.eng.hctx.net/permits FOR EACH SCOPE OF WORK IN HC OR IN HCFCD ROW.

BENCHMARK REQUIREMENTS FOR PROPOSED BRIDGES AND OR NEW RESIDENTIAL SUBIDIVSIONS

When the County Engineer has determined that a new benchmark will be required to be established for the proposed project, the developer shall be required to install a benchmark per section 8.0, part 2 of the Harris County Infrastructure Regulations.

Is a new Benchmark required for this project? (*to be determined by Harris County*) [__] yes [__] no

If a new Benchmark is required, the proposed benchmark information is shown on sheets ____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN

Development constructed or placed in accordance with these plans will comply with all provisions of the Regulations of Harris County, Texas for Floodplain Management.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.
FOUNDATION NOTES: (*Applies to only buildings or building additions requiring a class II permit*)
All water heaters, furnaces, air conditioning units, electrical distribution panels, and any other mechanical or electrical equipment must be elevated in accordance with Section 4.05 of Harris County Floodplain regulations.
Any electrical circuit serving a light switch or outlet located below the base (100-year) flood elevation shall be dropped from above and be on a separate breaker.
All materials used below the (100-year) base flood elevation are on approved FEMA Technical Bulletin 2-08 as Class 5 water-resistant, and approved in accordance with FEMA Technical Bulletin 1-08 for foundation openings.
Critical facilities located in the 0.2% or 500yr floodplain or 1% or 100yr floodplain shall have the lowest floor elevated to 3 feet or more above the 0.2% flood elevation, or 24 inches above the crown of the adjacent road, which ever results in a higher elevation.
Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters.
Access routes elevated to or above the level of the base flood shall be provided to all critical facilities to the extent possible.
A completed as-built certificate must be submitted after the structure is complete and before it is occupied.
The County Engineer's Office will post a final inspection notice on the structure once all requirements have been met.
No fill may be used to elevate structures in the 1% or 100yr flood plain. Structures may be constructed on an open foundation, such as piers, or on continuous foundation walls with properly sized and located openings. All foundations are required to be designed by a registered professional engineer.
All structures shall be designed to withstand a three second gust basic wind speed of 120mph.
*Completed ***Elevation Certificates** to be submitted: one at permitting, a second after the slab is poured or sub-floor is installed and before the framing starts, and a third is required once construction is finished. *(PER CURRENT FIRM PANEL) to the Harris County Engineering Department, 10555 Northwest Freeway, Suite 120, Houston, TX 77092*

HARRIS COUNTY ENGINEERING DEPARTMENT - PERMIT OFFICE NOTE:

THE PERMIT MANAGER SIGNATURE REPRESENTS THE FOLLOWING:
- THE COMPLETION OF REVIEW OF THESE PLANS
- INTERPOSE NO OBJECTION TO THE PROPOSED DESIGN ON PRIVATE PROPERTY
- APPROVAL OF WORK IN HARRIS COUNTY MAINTAINED RIGHT OF WAY
- APPROVAL OF WORK IN PROPOSED HARRIS COUNTY RIGHT OF WAY THAT IS TO BE ACCEPTED BY THE COUNTY

HCED SIGNATURE BLOCK:

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A. PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE. I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE PLANS IN THEIR ENTIRETY ARE DESIGNED PER THE HARRIS COUNTY ENGINEERING STANDARDS, REGULATIONS, AND GUIDELINES UNLESS PROVIDED A VARIANCE BY THE COUNTY ENGINEER OR HIS DESIGNEE. SHOULD IT BE DEEMED BY HCED STAFF, THAT THE PLANS DO NOT MEET THE COUNTY'S STANDARDS, REGULATIONS AND GUIDELINES AND DID NOT RECEIVE AN APPROVED VARIANCE, THE APPROVAL OF SAID PLANS BECOMES NULL AND VOID AND THE DESIGN PLANS MUST BE CORRECTED AT NO CHARGE TO THE COUNTY.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 225

CRAG A. PERRY — SIGNATURE
AUGUST 22, 2025 — DATE

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY.

SEAL INTERIM REVIEW ONLY
Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Crag Alexander Perry
115345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C. APPROVED DATE

HC PROJECT NO. 0000000000 | HCFCD PROJECT NO. 0000000000 | SHEET NUMBER 17 OF 225

Stately Oaks Lift Station

HARRIS COUNTY ENGINEERING DEPARTMENT REVIEW SHEET

VERSION 20.0 MAY 27, 2020

DRAWING NO. G-501

IN REVIEW WITH HCED

PLOTTED: 8/22/2025 1:44 AM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\017 G-501.dwg

1. PROPERTY DESCRIPTION

I. LOCATION INFORMATION

A. HARRIS COUNTY COMMISSIONER'S PRECINCT:
☐ 1 ☐ 2 ☐ 3 ☐ 4

B. KEY MAP: _____

C. ADDRESS: _____

II. LEGAL DESCRIPTION

A. ACREAGE: _____

B. ☐ SUBDIVISION: _____

☐ SURVEY & ABSTRACT: _____

C. ADJACENT ROADS: _____

III. PLATTING

A. SUBDIVISION PLAT N/A
☐ PROPOSED PLAT / REPLAT
☐ RECORDED PLAT / REPLAT

PLAT NAME: _____

B. STREETS PROPOSED
☐ PUBLIC
☐ PRIVATE
☐ PUBLIC & PRIVATE
☐ NONE

IV. JURISDICTIONS

☐ CITY OF _____
☐ ETJ, CITY OF HOUSTON
☐ ETJ, CITY OF _____
☐ NO ETJ
☐ UTILITY DISTRICT (NAME)_____

V. HCAD ACCOUNT NOS. (ALL) KEY MAP PAGE_____

_____
_____
_____

2. SITE DETENTION DRAINAGE

I. PROPOSED DRAINAGE AREA

☐ NEW DEVELOPMENT AREA: _____
☐ RE-DEVELOPMENT AREA (AMOUNT INCREASED IMPERVIOUS AREA): _____
☐ LOW IMPACT DEVELOPMENT (LID)
METHOD/DESCRIPTION _____

II. METHODOLOGY

HCFCD PCPM DETENTION METHOD USED:
☐ METHOD 1 (LESS THAN 20 ACRES)
☐ METHOD 2 (20 ACRES TO 640 ACRES)
☐ METHOD 3 (GREATER THAN 640 ACRES)
☐ OTHER _____

III. DETENTION VOLUME & OUTFALL

OUTFALL TO:
☐ .65, H.C.F.C.D. CHANNEL, (H.C.F.C.D. UNIT NO.) _____
☐ .75, EXISTING STORM SEWER (OWNER & OPERATOR) _____
☐ 1.00, ROADSIDE DITCH, (OWNER & ROAD NAME) _____
☐ OTHER (OWNER & OPERATOR) _____

IV. STORMWATER DETENTION BASIN INFORMATION

A. HCFCD PCPM SUMMARY TABLE SEE SHEET _____ OF THESE PLANS.

DETENTION BASIN SERVICE AREA		acres	
STORM EVENT	50% EXCEEDANCE (2-YEAR)	10% EXCEEDANCE (10-YEAR)	1% EXCEEDANCE (100-YEAR)
MAXIMUM ALLOWABLE OUTFLOW (PRE-DEVELOPMENT PEAK FLOW)			
MAXIMUM OUTFLOW PROVIDED (PEAK FLOW FROM BASIN)			
LOWEST NATURAL/FINISHED GROUND OR FINISHED FLOOR ELEVATION ESTIMATE			
DESIGN WATER SURFACE ELEVATION			
MINIMUM STORAGE REQUIRED (ac-ft)			
DETENTION STORAGE PROVIDED (ac-ft)			
STORAGE RATE PROVIDED (ac-ft/ac)			
OUTFLOW VELOCITY INTO CHANNEL (ft/sec)			
DRAIN TIME – 1% ONLY (hours)			
EMERGENCY OVERFLOW (TYPE, SIZE, ELEVATION, ETC.)			

B. DETENTION BASIN TO BE MAINTAINED BY _____

C. DETENTION SERVICE AREA MAP ON SHEET _____

D. ADDITIONAL CRITERIA FOR PUMPED DETENTION BASINS
VOLUME OF PUMPED 1% EXCEEDANCE STORAGE VOLUME = _____ % OF TOTAL VOLUME
MAXIMUM DESIGN OUTFLOW VELOCITY INTO HCFCD CHANNEL = _____ FT/SEC
DRAIN TIME FOR BASIN = _____ HOURS BASED ON _____ HEAD POND

V. DETENTION PROVIDED IN OTHER PLANS:

HCFCD PROJECT No. _____ DATE SIGNED BY HCFCD: _____
PLAN TITLE _____
DETENTION POND SERVICE AREA MAP IS PROVIDED ON SHEET _____
ENGINEERING FIRM _____
DETENTION BASIN MAINTAINED BY: _____

VI. FLOW RESTRICTOR SIZE

OUTFALL PIPE SIZE: _____
RESTRICTOR PIPE SIZE: _____
RESTRICTOR PLATE DIMENSION: _____

VII. DETENTION PROVIDED BY

☐ REGIONAL DETENTION BASIN SYSTEM (APPROVED H.C. PRJ NO.): _____

FOR PROJECTS LOCATED IN ANY FLOODPLAIN
Development constructed or placed in accordance with these plans will comply with all provisions of the designated Floodplain Administrator.
No net fill is allowed in the flood plain and no fill is allowed in the floodway.

OFFSITE SHEET FLOW: (100 YEAR)

OFFSITE SHEET FLOW MAPPING, TOTAL DISCHARGE CALCULATIONS, AND DESIGN ACCOMODATIONS ARE SHOWN ON SHEET ____ OR, AS PRESENTED IN THE APPROVED DRAINAGE STUDY ENTITLED _____.

TOTAL ACREAGE = ____
TOTAL DISCHARGE = ____

NOTE: ALL OFFSITE SHEET FLOW FROM ADJACENT PROPERTIES MUST BE IDENTIFIED AND PROPERLY ACCOUNTED FOR IN THE PROJECT. THE SIGNING ENGINEER HEREBY CERTIFIES THAT THESE AREAS HAVE BEEN ADDRESSED.

3. SWQ DISCHARGE INTO FCD FACILITY

I. SWPPP: CONSTRUCTION MEASURES. (Must complete)

☐ DISTURBS >1AC. SITE PLAN & DETAILS ON SHEET(S) _____
☐ DISTURBS <1AC. N/A

*II. APPLICABILITY FOR PERMANENT FEATURES. (Must complete)

EXEMPT NEW DEVELOPMENT:
☐ PROJECT IS ON A PARCEL (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (Must be verified with plat)

EXEMPT REDEVELOPMENT:
☐ PROJECT DOES NOT MEET THE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Part A,Sec. 2.39 of Regulations of Harris County, Texas for Stormwater Quality Management)

EXEMPT GRANDFATHERED:
☐ PROJECT'S DRAINAGE TIES DIRECTLY INTO AN EXISTING DRAINAGE SYSTEM PRIOR TO OCTOBER 1, 2001.
(FOR VERIFICATION: PROVIDE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS)

GENERAL:
☐ PROJECT'S SWQ REQUIREMENTS FALL WITHIN THE JURISDICTION OF: _____
☐ STORMWATER QUALITY PERMIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN PROJECT TITLE: _____
HARRIS COUNTY PROJECT No _____ & SWQ PERMIT No. _____
STORMWATER POLLUTION PREVENTION PLAN:
☐ SITE PLAN OR DETAILS(S) _____

III. PERMANENT SWQ FEATURES. (COMPLETE IF NOT EXEMPT)

☐ VEGETATIVE CONTROLS USED: (FILTER STRIP, GRASSY SWALE, BIOFILTRATION, FORESTRY DETAILS AND CALCULATIONS APPEAR ON SHEET(S) _____
POND STRUCTURE USED (WET, DRY, WETLANDS) DETAILS AND CALCULATIONSAPPEAR ON SHEET(S)_____
☐ HYDRODYNAMIC TYPE SEPARATOR MODEL: _____
☐ OTHER(S): _____

4. FLOOD PLAIN STATUS

I. GENERAL INFORMATION

FIRM PANEL(S) FOR PROPERTY: _____
FIRM PANEL(S) DATE: _____
STATUS OF PROPERTY ON MAP
☐ ENTIRELY LOCATED IN UNSHADED ZONE "X"
☐ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO._____) (1% BASE FLOOD LEVEL_____) (0.2% BASE FLOOD LEVEL_____)
☐ SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO._____ REVISED FLOODPLAIN IS SHOWN ON SHEET____

ELEVATION INFORMATION
BENCHMARK USED
☐ HARRIS COUNTY FLOODPLAIN REFERENCE MARK
☐ HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS)
DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT ***(2001 ADJ.)*** _____

II. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION

☐ PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X"
☐ PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL

III. FLOODPLAIN STORAGE SUMMARY

(APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN).
A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE, CONCRETE, ASPHALT, ETC.):
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) ____ CUBIC YARDS _____
B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN:
BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) ____ CUBIC YARDS _____
INCLUDING CALCULATIONS)
C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET _____

5. WORK IN HCFCD RIGHT-OF-WAY

I. TYPE OF WORK TO BE PERFORMED IN HCFCD HCFCD ROW

A. BOND/NOTIFICATION INFORMATION
☐ HCFCD WATERSHED _____
☐ HCFCD UNIT No. _____
☐ NUMBER OF OUTFALLS _____
☐ UTILITY CROSSING
☐ ROADWAY BRIDGE/CULVERT CROSSING
☐ FILL ACTIVITY
☐ REHABILITATION OF CHANNEL
☐ MAINTENANCE
☐ TEMPORARY CROSSING
☐ TRAIL (LENGTH) _____
☐ OTHER _____
COST OF WORK IN HCFCD ROW _____

II. USACE ENVIRONMENTAL PERMIT

☐ US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER(S) _____
☐ US ARMY CORPS OF ENGINEERS INDIVIDUAL PERMITS
☐ OTHER
☐ NO PERMITS REQUIRED
EXPLAIN: _____

III. REFERENCE / BASIS OF DETERMINATION

☐ ENVIRONMENTAL CONSULTANT REPORT
BY _____
REPORT TITLE _____
REPORT DATE _____
☐ OTHER _____

NOTES:
I. – III. REQUIRED ON PROJECTS WITH WORK IN A HCFCD CHANNEL. PLEASE REFERENCE SECTION 17 OF THE FLOOD CONTROL DISTRICT POLICY, CRITERIA, AND PROCEDURE MANUAL FOR MORE INFORMATION.

IV. HCFCD STANDARD NOTES: SEE SHEET _____ OF THESE PLANS.

V. HCFCD STANDARD DETAILS: SEE SHEET _____ OF THESE PLANS.

VI. HCFCD ACCESS PLAN: SEE SHEET _____ OF THESE PLANS.

VII. REFER TO THE FOLLOWING PLAN SHEETS: _____
FOR EXISTING AND PROPOSED RIGHT(S) OF WAY INCLUDING DELINEATION AND RECORDING INFORMATION PER HCFCD POLICY, CRITERIA, & PROCEDURE MANUAL (i.e., DRAINAGE EASEMENT, FEE STRIP, ETC.) AND GRANTEE (e.g. COH, HCFCD, PUBLIC, TXDOT, ETC.)

6. REPORTS/AGREEMENTS

I. HCFCD ACCEPTED REPORTS (ALL)

REPORT TITLE _____
_____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

REPORT TITLE _____
_____
HCFCD PROJECT #_____
ENGINEERING FIRM _____
REPORT ACCEPTANCE DATE _____

DESCRIPTION OF VARIANCE _____
_____
DOCUMENT ID #_____
VARIANCE ACCEPTANCE DATE _____

II. AGREEMENT TYPE & No.;

☐ INTERLOCAL (ILA): _____
☐ HCFCD MAINTENANCE _____
☐ TURF ESTABLISHMENT _____
☐ OTHER _____

IN REVIEW WITH HCFCD

HCFCD SIGNATURE BLOCK

PROJECT NAME: _____

ADDRESS: _____

WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:

HARRIS COUNTY FLOOD CONTROL DISTRICT

INTERPOSE NO OBJECTION
BY _____
FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-WAY

APPROVED:
BY _____
FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-OF-WAY

APPROVED:
BY _____
FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-OF-WAY

NO REVIEW REQUIRED:
BY _____
FINAL PERMITTING BY OTHERS

ADDITIONAL COMMENTS:
_____
_____
_____
_____
_____

THE PROJECT WAS REVIEWED, HOWEVER, THIS DOES NOT MEAN THE ENTIRE PROJECT, INCLUDING ALL SUPPORTING DATA AND CALCULATIONS HAVE BEEN COMPLETELY CHECKED AND VERIFIED. THESE DRAWINGS ARE SIGNED, DATED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS, WHICH THEREFORE CONVEYS THE ENGINEER'S RESPONSIBILITY AND ACCOUNTABILITY. THIS DOES NOT RELIEVE ANY PARTY FROM COMPLYING WITH APPROPRIATE FEDERAL, STATE AND LOCAL ENVIRONMENTAL RULES, LAWS, AND REGULATIONS AND ANY OTHER LEGALLY ADOPTED REGULATION OR ORDINANCE RELATED TO LAND DEVELOPMENT. IF THE CITY SIGNATURE'S ARE REQUIRED BY ORDINANCE, COUNTY PERMITS WILL NOT BE ISSUED UNTIL SUCH SIGNATURES ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORDANCE WITH LOCAL GOVERNEMENT CODE CH. 245.

ENGINEER'S CERTIFICATION

I, CRAG A. PERRY , A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE INFORMATION PRESENTED ON THIS SHEET IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THAT I AM NOT VIOLATING ANY PROVISION OF THE CURRENT TEXAS ENGINEERING PRACTICE ACT AND RULES CONCERNING THE PRACTICE OF ENGINEERING AND PROFESSIONAL ENGINEERING LICENSURE.

ANY VIOLATIONS WILL BE FORWARDED TO THE HARRIS COUNTY DISTRICT ATTORNEY'S OFFICE FOR PROSECUTION.

THE COMPLETED PROJECT CONSISTS OF DRAWING SHEETS 1 THRU 225

CRAG A. PERRY (SIGNATURE) AUGUST 22, 2025 (DATE)

DEAL INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:
Crag Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

REVISIONS

NOTE: REVISION BLOCK IS TO BE USED ONLY FOR CHANGES MADE AFTER PLANS HAVE BEEN APPROVED BY HARRIS COUNTY FLOOD CONTROL.

DATE	SHEET NO.	DESCRIPTION	P.E. INITIAL	H.C.F.C.D APPROVED DATE

Stately Oaks Lift Station

HARRIS COUNTY FLOOD CONTROL DISTRICT
REVIEW SHEET

VERSION 1.0 OCTOBER 2019

DRAWING NO. G-502

HARRIS COUNTY FLOOD CONTROL PROJECT NO. 0000000000

SHEET NUMBER 18 OF 225

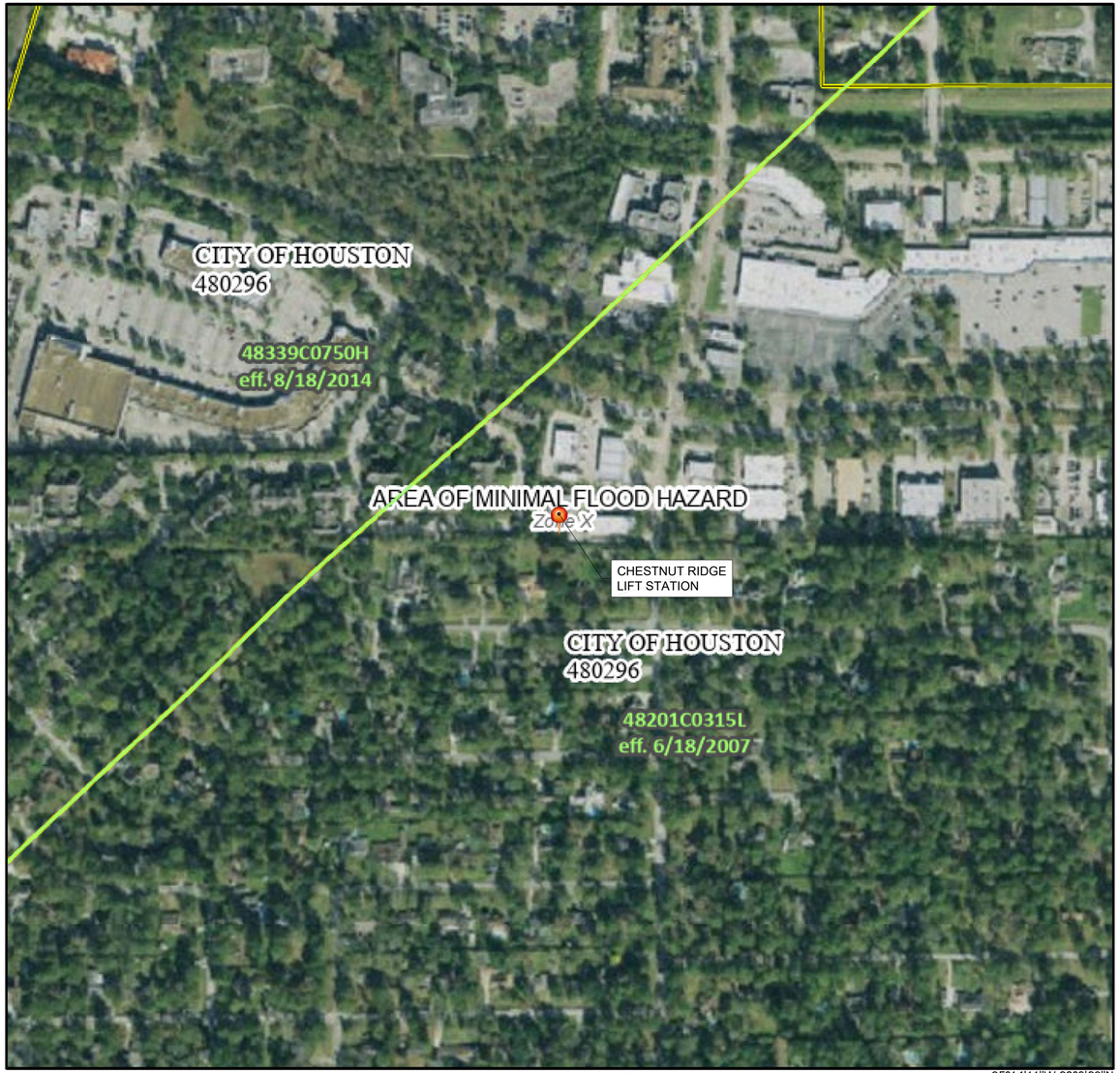
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FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\018 G-502.dwg

National Flood Hazard Layer FIRMette

FEMA

95°14'49"W 30°3'10"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

95°14'11"W 30°2'39"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/4/2025 at 4:08 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NO. | DATE | REVISION | APP.

PLOTTED: 8/22/2025 1:44 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes. This document is released for the purpose of interim review under the authority of:

Craig Alexander Perry
Engineer
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

FIRMETTE

CHESTNUT RIDGE LIFT STATION
NATIONAL FLOOD HAZARD
LAYER FIRMETTE MAP

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. F-101

HORIZ: 1"=250'
VERT: NONE

SHEET NO. 19 OF 225

DRAWING SCALE

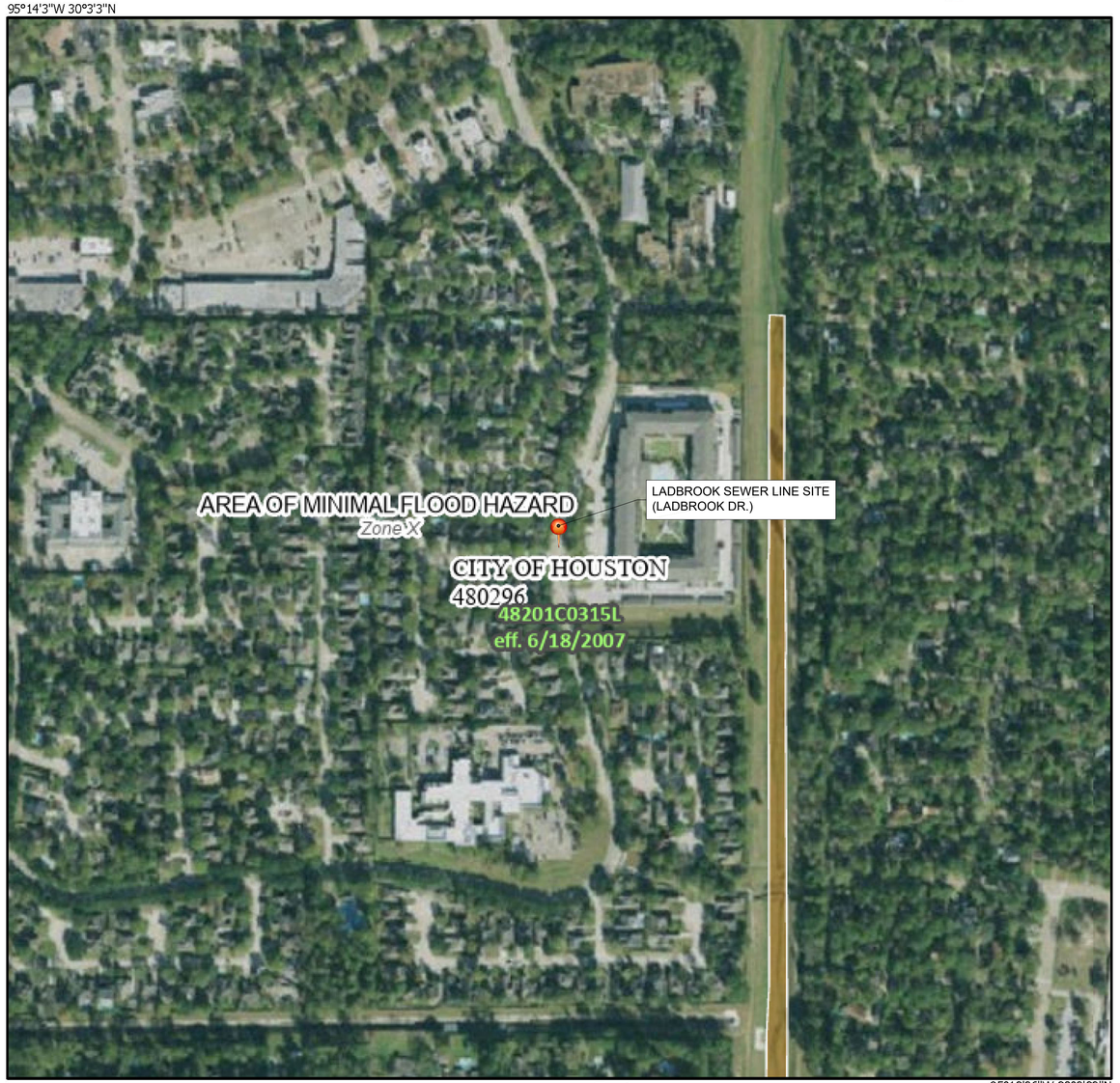
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\019 F-101.dwg

National Flood Hazard Layer FIRMette

FEMA

95°14'3"W 30°3'3"N



95°13'26"W 30°2'32"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/4/2025 at 4:13 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NO | DATE | REVISION | APP.

PLOTTED: 8/22/2025 1:45 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-8575

INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes. This document is released for the purpose of interim review under the authority of:

Craig Alexander Perry
Engineer
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

FIRMETTE

LADBROOK LIFT STATION
NATIONAL FLOOD HAZARD
LAYER FIRMETTE MAP

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. F-201

HORIZ: 1"=250'
VERT: NONE

SHEET NO. 20 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\020 F-201.dwg

National Flood Hazard Layer FIRMette

FEMA

95°17'58"W 29°45'2"N



95°17'21"W 29°44'31"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/4/2025 at 4:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:45 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
Registered Engineer
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

FIRMETTE

MAGNOLIA PARK LIFT STATION
NATIONAL FLOOD HAZARD
LAYER FIRMETTE MAP

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. F-301	HORIZ: 1"=250' VERT: NONE
SHEET NO. 21 OF 225	DRAWING SCALE

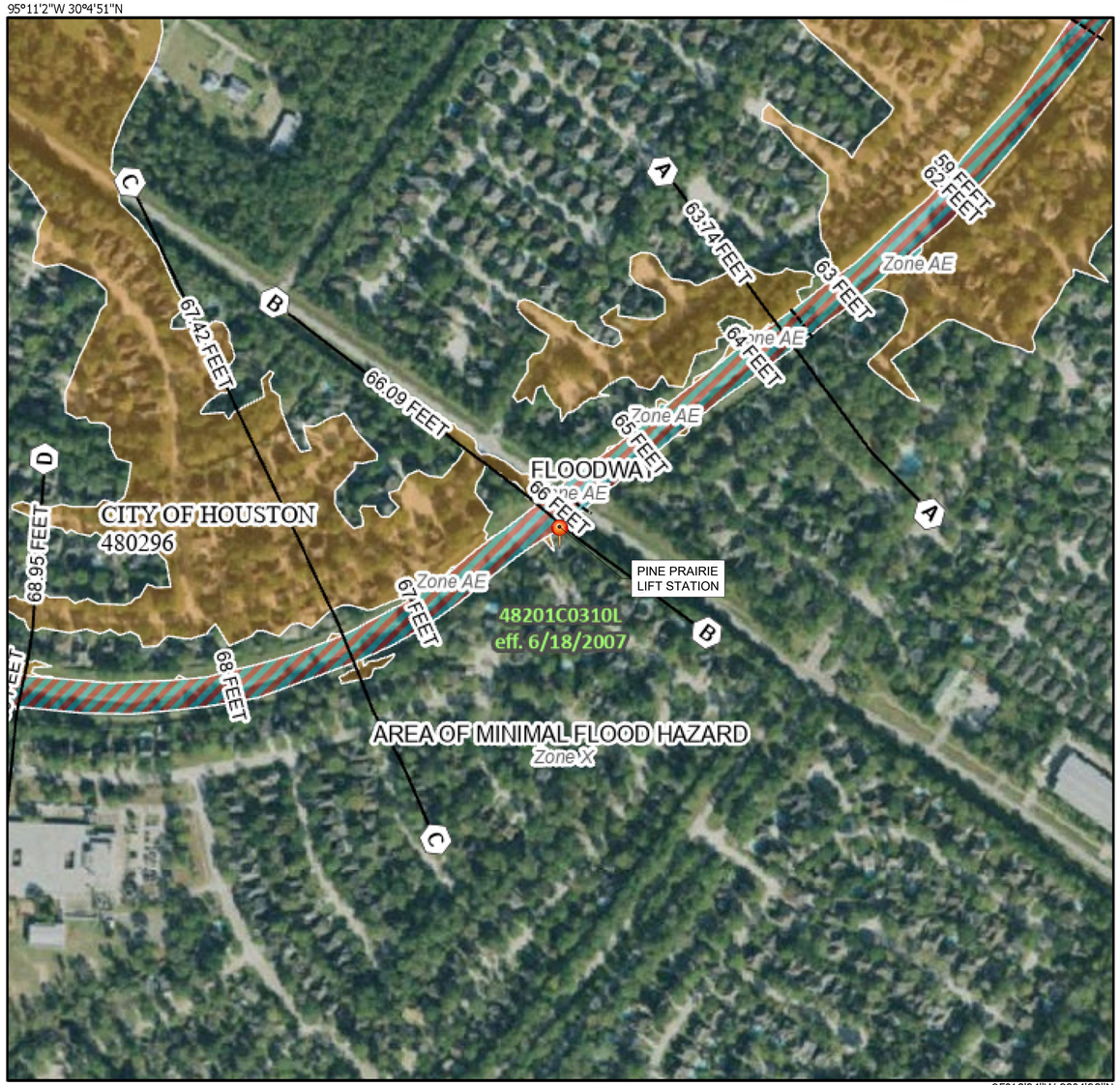
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\11110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\021 F-301.dwg

National Flood Hazard Layer FIRMette

FEMA

95°11'2"W 30°4'51"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

95°10'24"W 30°4'20"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
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- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/4/2025 at 4:11 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NO. | DATE | REVISION | APP.

PLOTTED: 8/22/2025 1:45 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Crag Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

FIRMETTE

PINE PRAIRIE LIFT STATION
NATIONAL FLOOD HAZARD
LAYER FIRMETTE MAP

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. F-401

HORIZ: 1"=250'
VERT: NONE

SHEET NO. 22 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\022 F-401.dwg

National Flood Hazard Layer FIRMette

FEMA

95°9'6"W 30°3'34"N



95°8'28"W 30°3'3"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
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- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/4/2025 at 4:10 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:45 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
Name
116345
License No.
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

FIRMETTE

STATELY OAKS LIFT STATION
NATIONAL FLOOD HAZARD
LAYER FIRMETTE MAP

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. F-501

HORIZ: 1"=250'

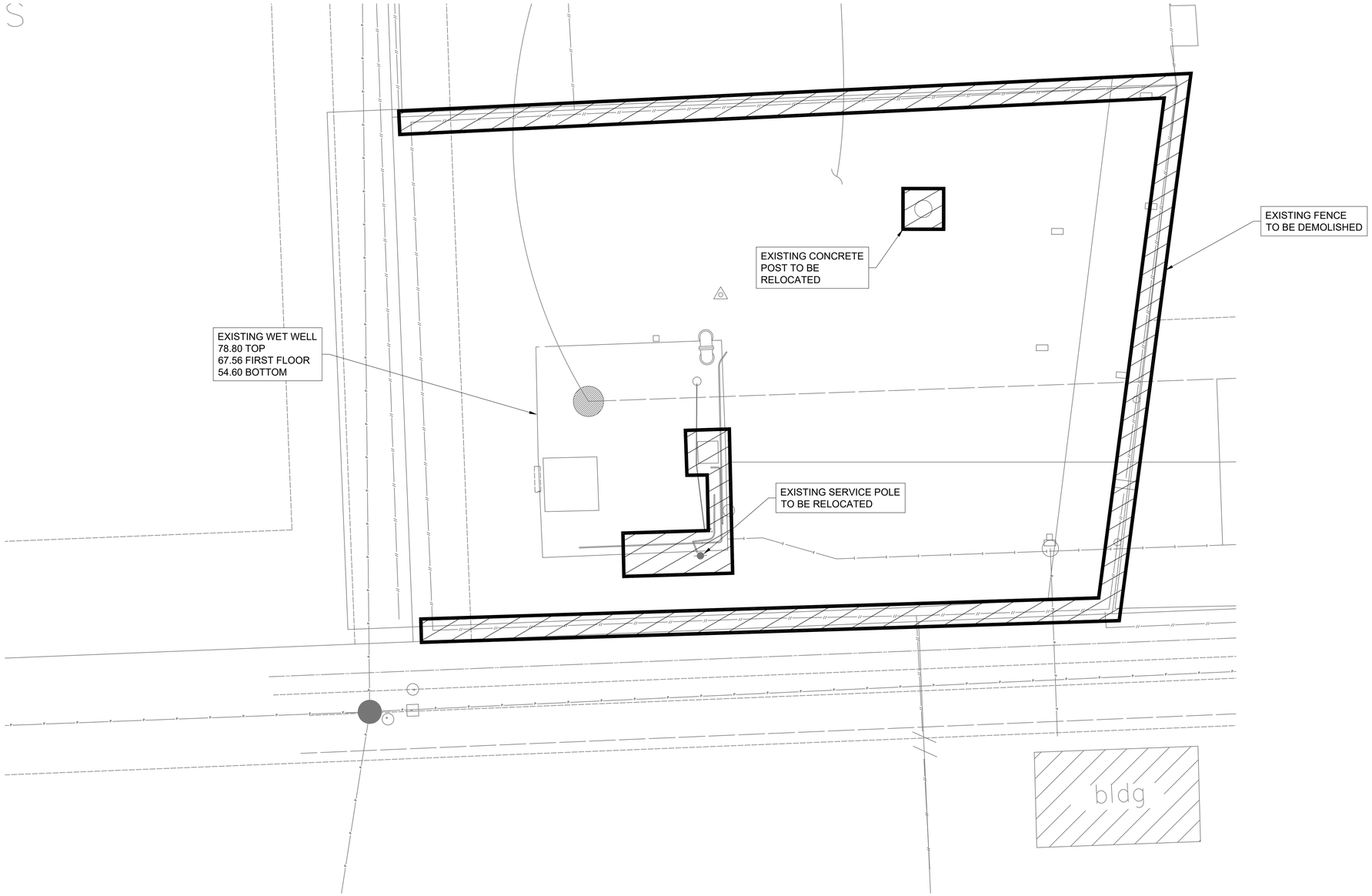
VERT: NONE

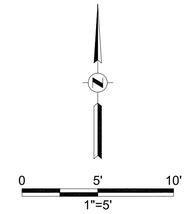
SHEET NO. 23 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\023 F-501.dwg





NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:45 AM PEN TABLE: Z_PUB_WKS_H.ctb

LEGEND:

LIMITS OF LIFT STATION SITE DEMOLITION

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. CONTRACTOR SHALL GRIND DOWN EXPOSED STEEL AFTER SAW CUTTING CONCRETE WALL AND COAT STEEL WITH EPOXY COATING OR SUITABLE COATING PRIOR TO APPLYING WET WELL COATING.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED
ELEV.34.38 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
116345
AUGUST 22, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

CHESTNUT RIDGE LIFT STATION
DEMOLITION
SITE PLAN

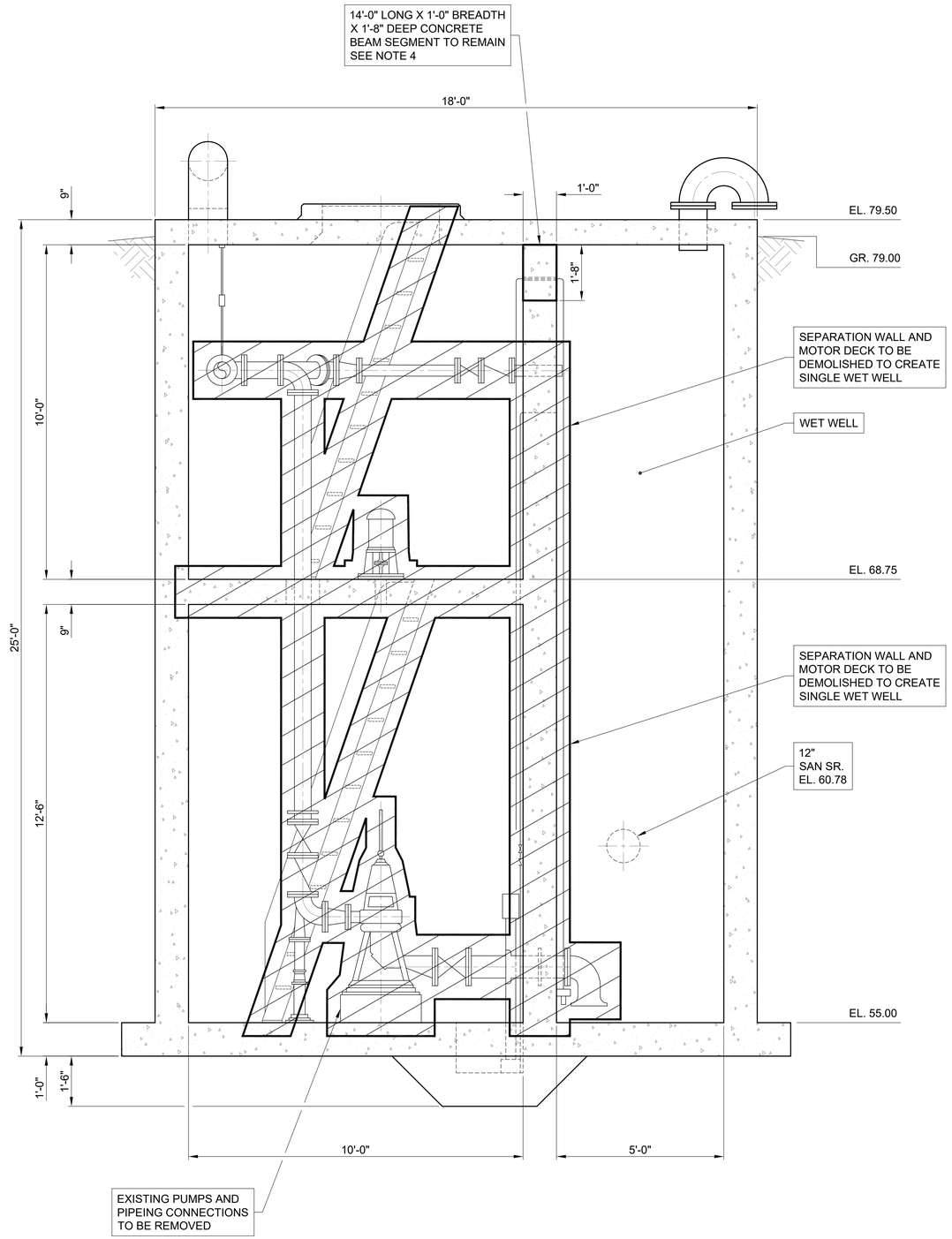
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-101
HORIZ: 1"=5'
VERT: NONE
SHEET NO. 24 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\024 C-101.dwg



CA C-102 SECTION
SCALE: 1/2"=1'-0"

LEGEND:

LIMITS OF LIFT STATION DEMOLITION

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. SAW CUT EXISTING CONCRETE AT MOTOR DECK AND DIVIDING WALL BETWEEN THE WET WELL AND DRY WELL AREAS. SAW CUT AT THE TOP OF THE DIVIDER WALL TO LEAVE AN 18-INCH DEEP BEAM SEGMENT. COAT EXPOSED STEEL WITH EPOXY PAINT PRIOR TO CONCRETE COATING OF THE WET WELL.

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:45 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Crag Alexander Perry
Name
116345
License No.
AUGUST 22, 2025
Date
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

CHESTNUT RIDGE LIFT STATION
DEMOLITION
SECTION VIEW

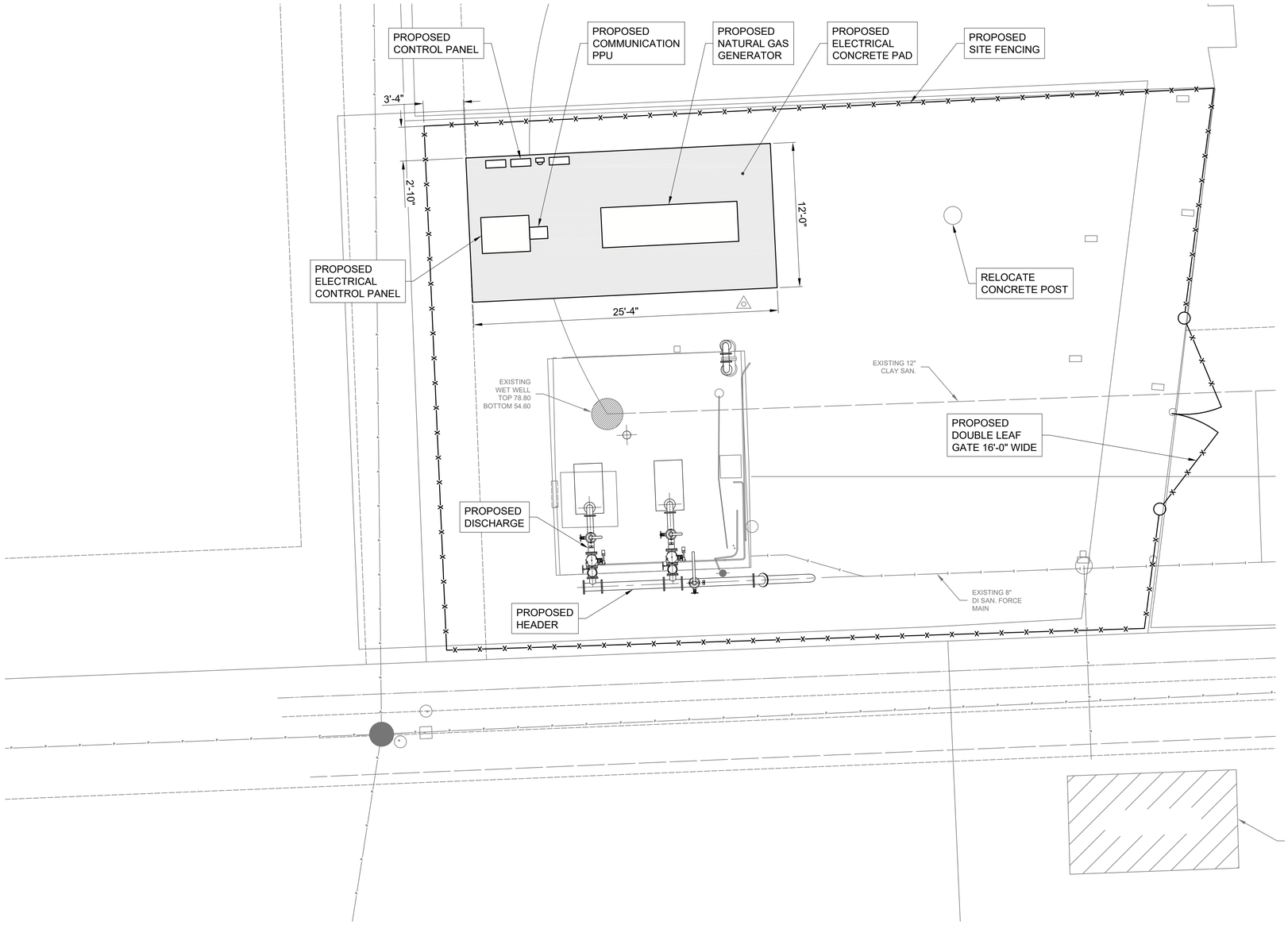
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-102
HORIZ: 1/2"=1'-0"
VERT: NONE
SHEET NO. 25 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\025 C-102.dwg



NOTE:

1. FOR SITE CONTROL POINTS TABLE SEE DRAWING NO. C-106 CHESTNUT RIDGE LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES.

LEGEND:

CR-101 SITE CONTROL POINTS

GENERAL NOTES:

1. UNDERGROUND UTILITIES MAY EXIST IN THE VICINITY OF THIS PROJECT. LOCATIONS SHOWN FOR EXISITING UTILITIES ARE APPROXIMATE AND OTHER UTILITIES MAY EXIST IN THE VICINITY OF THIS PROJECT WHICH ARE NOT SHOWN ON THESE PLANS
2. CONTRACTOR IS REQUIRED TO CONTACT APPROPRIATE UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ASCERTAIN THE LOCATION OF ALL UNDERGROUND UTILITIES IN THE VICINITY OF THIS PROJECT.
3. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
4. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE WET WELL HATCHES PER SELECTED HATCH AND PUMP MANUFACTURER'S REQUIREMENTS.
5. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH LINK-SEAL (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
6. LABEL HATCHES WITH THE CORRESPONDING PUMP NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING WELDED TO THE HATCH. LABEL CHECK VALVES WITH THE CORRESPONDING VALVE NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING ADHERED TO THE TOP OF THE CHECK VALVE.

0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb
PLOTTED: 8/22/2025 1:46 AM

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T TEXAS/SWBT underground conduit facilities only. Signature valid for one year.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

CHESTNUT RIDGE LIFT STATION
PROPOSED
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-103
HORIZ: 1"=5'
VERT: NONE
SHEET NO. 26 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED
ELEV.34.38 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

MECHANICAL NOTES:

1. ALL LIFT STATION ABOVE GROUND PIPING TO BE FLANGED DUCTILE IRON PIPING, CLASS 53, AND FITTINGS TO BE SHORT BODY UNLESS OTHERWISE SHOWN.
2. ALL LIFT STATION BELOW GROUND PIPING TO BE MECHANICAL JOINT RESTRAINED.
3. WET WELL AND ALL PIPING IN WET WELL TO BE COATED IN ACCORDANCE WITH CITY OF HOUSTON PAINTING AND PROTECTIVE COATING SPECS FOR WASTEWATER TREATMENT PLANT SUBMERGED EQUIPMENT AND PIPING.
4. CONTRACTOR TO PROVIDE TEMPORARY CONSTRUCTION PLUGS WHERE NECESSARY ON INFLUENT AND DISCHARGE PIPING IF SANITARY SEWER CONSTRUCTION IS NOT CONCURRENT WITH LIFT STATION CONSTRUCTION. OTHERWISE MAKE CONNECTION. (NO SEPARATE PAY).
5. ALL BOLTS IN WET WELL TO BE ANSI TYPE 304 SS.
6. DISSIMILAR METAL PIPES CONNECTIONS SHALL BE CONNECTED TO PROTECT EACH METAL AGAINST CORROSION.
7. FERROUS SURFACES PIPING AND VALVES SHALL BE COATED IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON STANDARD SPECIFICATIONS.
8. CONTRACTOR SHALL ENSURE THAT THE BOTTOM OF WET WELL SHALL HAVE A MINIMUM SLOPE OF 10 PERCENT TOWARDS THE PUMPS INTAKE AND SHALL HAVE A SMOOTH FINISH.
9. CHECK VALVES SHALL BE AIR CUSHIONED WITH SIDE MOUNT LEVER AND WEIGHT. THE VALVE SHAFT SHALL EXTEND THROUGH BOTH SIDES OF THE BODY WITH MIN. SHAFT DIAMETERS EQUAL TO APCO SERIES 6000. THE CUSHION SHALL BE TOTALLY ENCLOSED, SWIVEL MOUNTED AT THE BOTTOM AND EQUIPPED WITH MICROMETER AIR CONTROL VALVE AND BREATHER FILTERS.

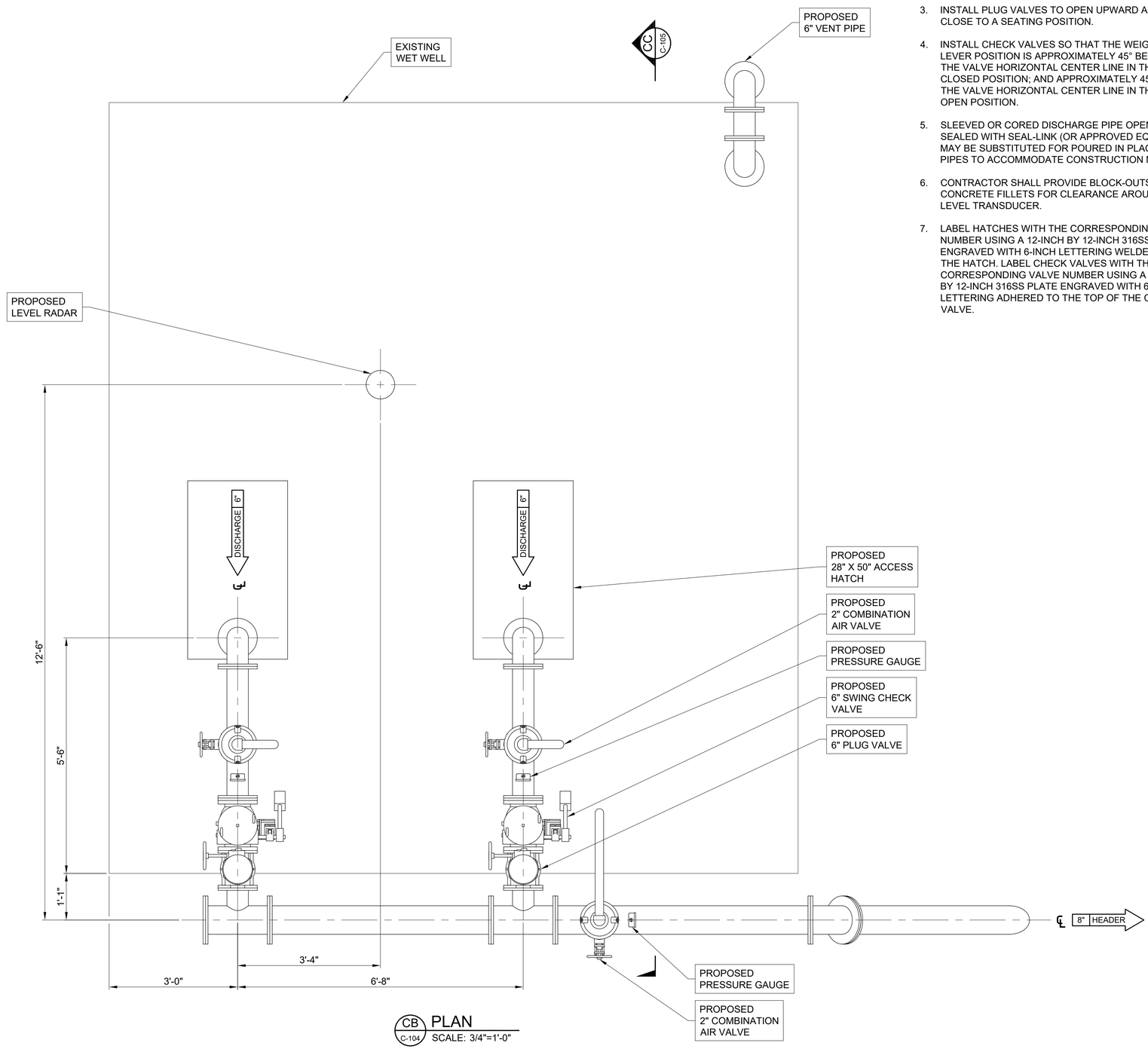
SITE WORK AND PIPING NOTES:

1. SEWER MATERIALS, CONSTRUCTION, AND TESTING TO BE IN ACCORDANCE WITH THE CITY OF HOUSTON PUBLIC WORKS DEPARTMENT SPECIFICATION.
2. ALL BURIED DUCTILE IRON PIPE AND FITTINGS TO BE POLYETHYLENE WRAPPED.
3. EXPOSED FORCE MAIN PIPING TO BE DUCTIE IRON PIPE, CLASS 53 FOR EXPOSED PIPING, AND CLASS 50 FOR BURIED PIPING.
4. 3/4" WATERLINE AND WATER METER TO BE INSULATED WITH SUITABLE INSULATION MATERIAL TO PROTECT AGAINST FREEZING OR APPROVED EQUAL.

PAVING NOTES:

1. CONCRETE PAVEMENT TO BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON PAVEMENT CONSTRUCTION SPECIFICATIONS.

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\026 C-103.dwg



NOTES:

1. SEE DETAILS AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR SHALL VERIFY DIMENSIONS DIMENSIONS NOTED ON DRAWINGS FOR PUMPS SELECTED.
3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION.
4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
5. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH SEAL-LINK (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
6. CONTRACTOR SHALL PROVIDE BLOCK-OUTS IN CONCRETE FILLETS FOR CLEARANCE AROUND LEVEL TRANSDUCER.
7. LABEL HATCHES WITH THE CORRESPONDING PUMP NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING WELDED TO THE HATCH. LABEL CHECK VALVES WITH THE CORRESPONDING VALVE NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING ADHERED TO THE TOP OF THE CHECK VALVE.

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:46 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-8570

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Engineer
116345
Registration Number
AUGUST 22, 2025
Date

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

CHESTNUT RIDGE LIFT STATION
PROPOSED
PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-104

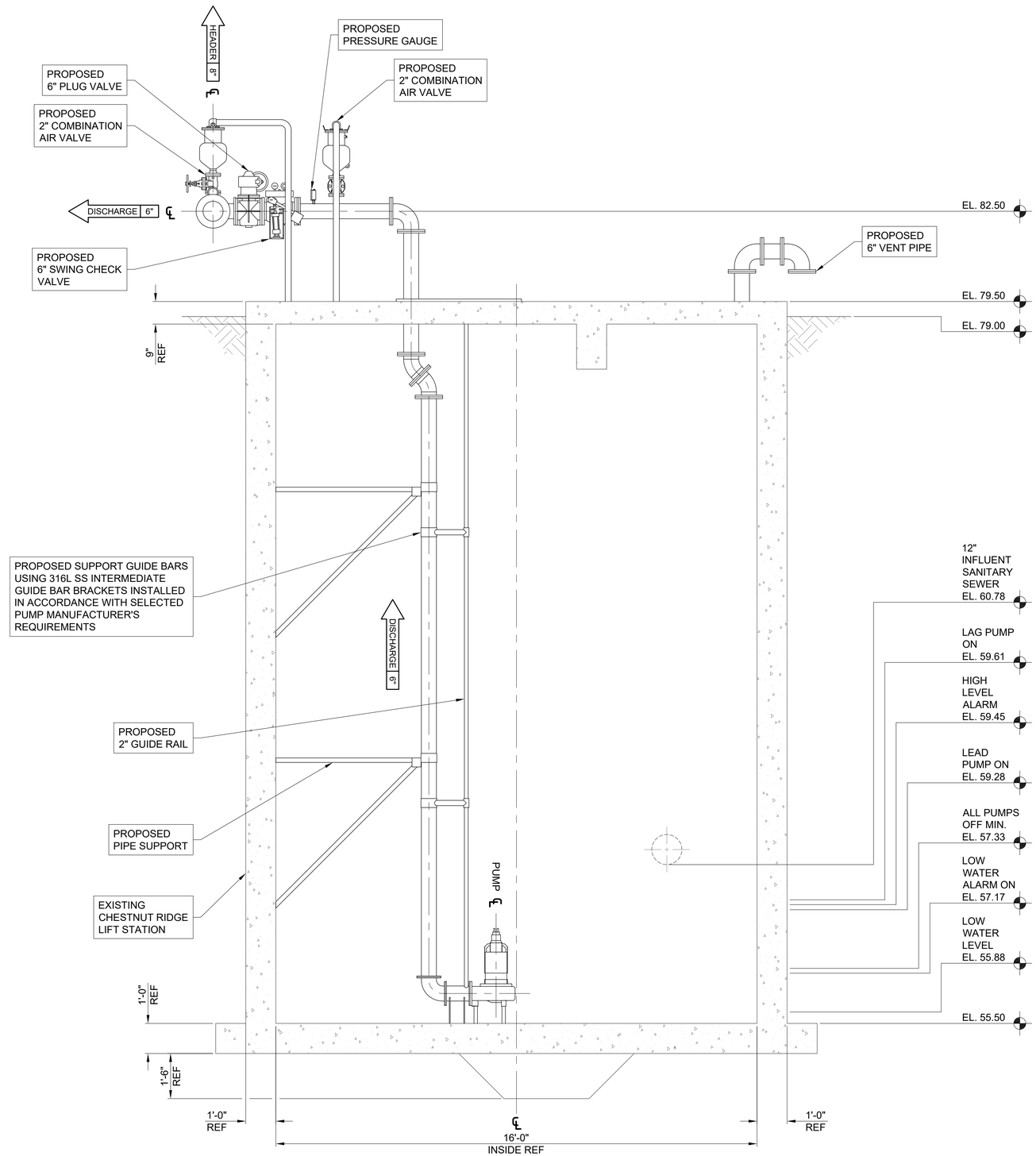
HORIZ: 3/4"=1'-0"
VERT: NONE

SHEET NO. 27 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\027 C-104.dwg



CC C-105 SECTION
SCALE: 1/2"=1'-0"

NOTES:

1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR TO PROVIDE ADHESIVE TYPE, AND EMBEDDED IN CONCRETE SLAB. CONTRACTOR TO SUBMIT DESIGN OF PUMP ANCHOR BOLTS AND PATTERN, INCLUDING CALCULATIONS DURING SHOP DRAWING SUBMISSION.
3. CONTRACTOR TO PROVIDE ADHESIVE ANCHORS IN LIEU OF WEDGE ANCHORS FOR ALL SUBMERGED CONDITIONS. AND SUBMIT DESIGN OF ANCHOR BOLTS DURING SHOP DRAWING SUBMISSION.
4. ALL PIPING IN THE WET WELL SHALL BE FLANGED, NO FLANGED COUPLING ADAPTORS, OR VICTAULIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE THE WET WELL.
5. SUPPORT GUIDE BARS SHALL BE SUPPORTED WITH 316SS SUPPORTS. AND SHALL BE INSTALLED IN ACCORDANCE WITH PUMP MANUFACTURER'S REQUIREMENTS. SUPPORT SHALL BE SPACED AT MAX. 5'-0".

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:46 AM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

CHESTNUT RIDGE LIFT STATION
PROPOSED
SECTION VIEW

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-105	HORIZ: 1/2"=1'-0" VERT: NONE
SHEET NO. 28 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

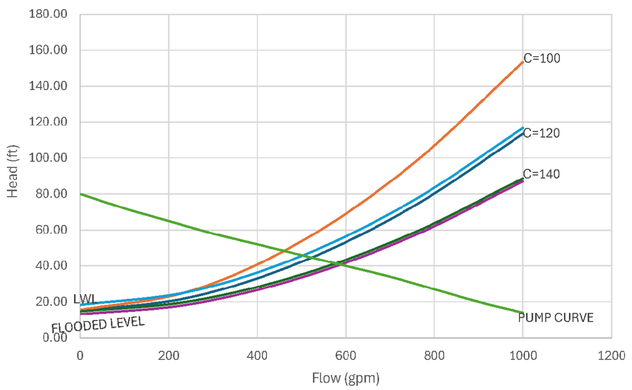
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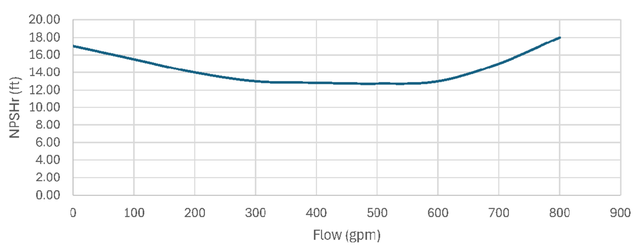
HORIZONTAL DATUM NOTE:

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PUMP CHARACTERISTICS	PUMP No. 1
MOTOR DATA :	
NOMINAL SIXZE (HP)	10
MAX SPEED (RPM)	1,765
SOLIDS PASSAGE	
MIN. SPHERE (IN)	4
CAPACITY (GPM)	
DESIGN	500
RUNOUT	958.77
DISCHARGE HEAD (FT)	
DESIGN	42.29
RUNOUT	16.20
SHUT OFF	80
EFFICIENCY (%)	
DESIGN	69.00
NSPHR (FT)	
DESIGN	12.73
RUNOUT	25.20
PUMP CYCLE TIME (MIN)	6
CUMMULATIVE CAPACITY (GPM)	500

C2 / C-106 PUMP DATA TABLE





C3 / C-106 PUMP OPERATION CURVES

RISING LEVEL CYCLE			
WATER LEVEL DEPTH	**WATER LEVEL ELEVATION**	**ACTION**	**PUMP(S) IN OPERATION**
2.33	57.33	PUMPS OFF LEVEL-NO ACTION	ALL PUMPS ARE OFF
4.58	59.28	LEAD PUMP TURNS ON	LEAD PUMP ON
5.78	60.78	HIGH WATER ALARM	HIGH WATER ALARM SOUND
5.78	60.78	HIGH HIGH LEVEL ALARM (FLOAT ON LEVEL)	ALL PUMPS ON (FLOATS)
FALLING LEVEL CYCLE			
WATER LEVEL DEPTH	**WATER LEVEL ELEVATION**	**ACTION**	**PUMP(S) IN OPERATION**
2.33	57.33	FLOAT OFF LEVEL	ALL PUMPS ARE OFF
4.61	59.61	HIGH WATER LEVEL ALARM OFF	LEAD PUMP ON
2.33	57.33	LEAD PUMP TURNS OFF	ALL PUMPS STOPPED- STANDBY PUMP SWITCHES TO LEAD PUMP
2.17	57.17	LOW LEVEL ALARM	

C1 / C-106 STATION OPERATION TABLES

NO.	DATE	REVISION	APP.

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GANNETT FLEMING

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

CHESTNUT RIDGE LIFT STATION
PUMP OPERATION AND
SITE CONTROL POINTS TABLES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-106
HORIZ: NONE
VERT: NONE
SHEET NO. 29 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

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NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

CHESTNUT RIDGE LIFT STATION
VALVE AND PIPE FITTING
SCHEDULE TABLES

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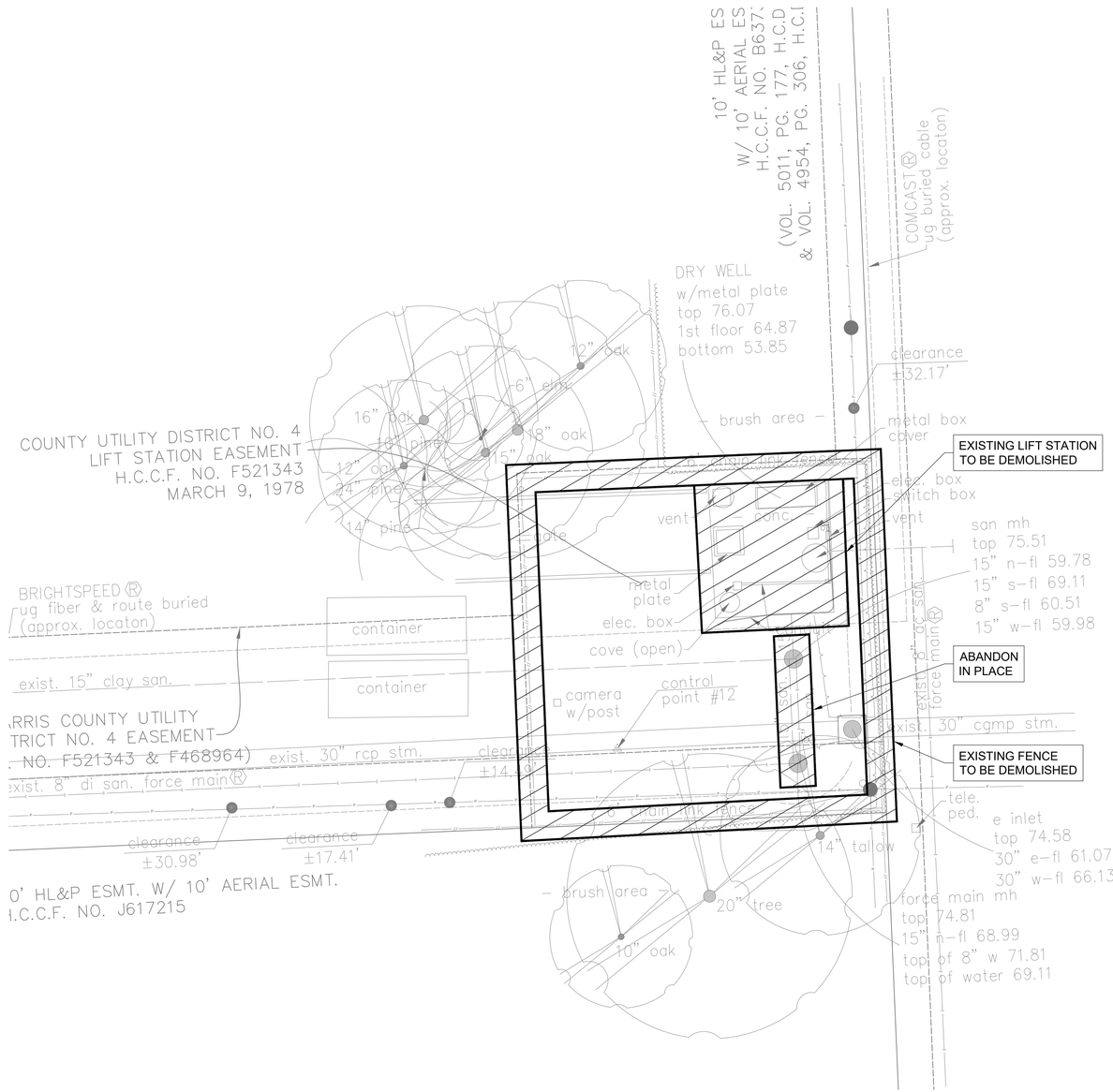
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-107	HORIZ: NONE VERT: NONE
SHEET NO. 30 OF 225	DRAWING SCALE

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H.C.F.C.D. UNIT NO.
G 103-38-00-01
CALLED 62.1851 ACRES
HARRIS COUNTY FLOOD
CONTROL DISTRICT
H.C.C.F. NO. H361522
PARCEL "C"
NOV. 23, 1981

0 10' 20'
1"=10'

LEGEND:

LIMITS OF LIFT STATION SITE DEMOLITION

NO.	DATE	REVISION	APP.

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NOTES:

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2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. REMOVE AND SALVAGE MANHOLE FRAMES AND COVERS, PUMPS, MOTORS, PIPING, AND FITTINGS. DELIVER SALVAGED ITEMS TO THE NEAREST CITY OF HOUSTON MAINTENANCE FACILITY.
4. MANHOLES TO BE DEMOLISHED SHALL BE DEMOLISHED TO A MINIMUM DEPTH OF 4 FEET BELOW FINISHED GRADE, AND SHALL BE FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
5. ABANDONED SEWER LINES SHALL BE COMPLETELY FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.

NOTES:

6. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

GANNETT FLEMING

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

LADBROOK LIFT STATION
DEMOLITION
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-201
HORIZ: 1"=10'
VERT: NONE
SHEET NO. 31 OF 225
DRAWING SCALE
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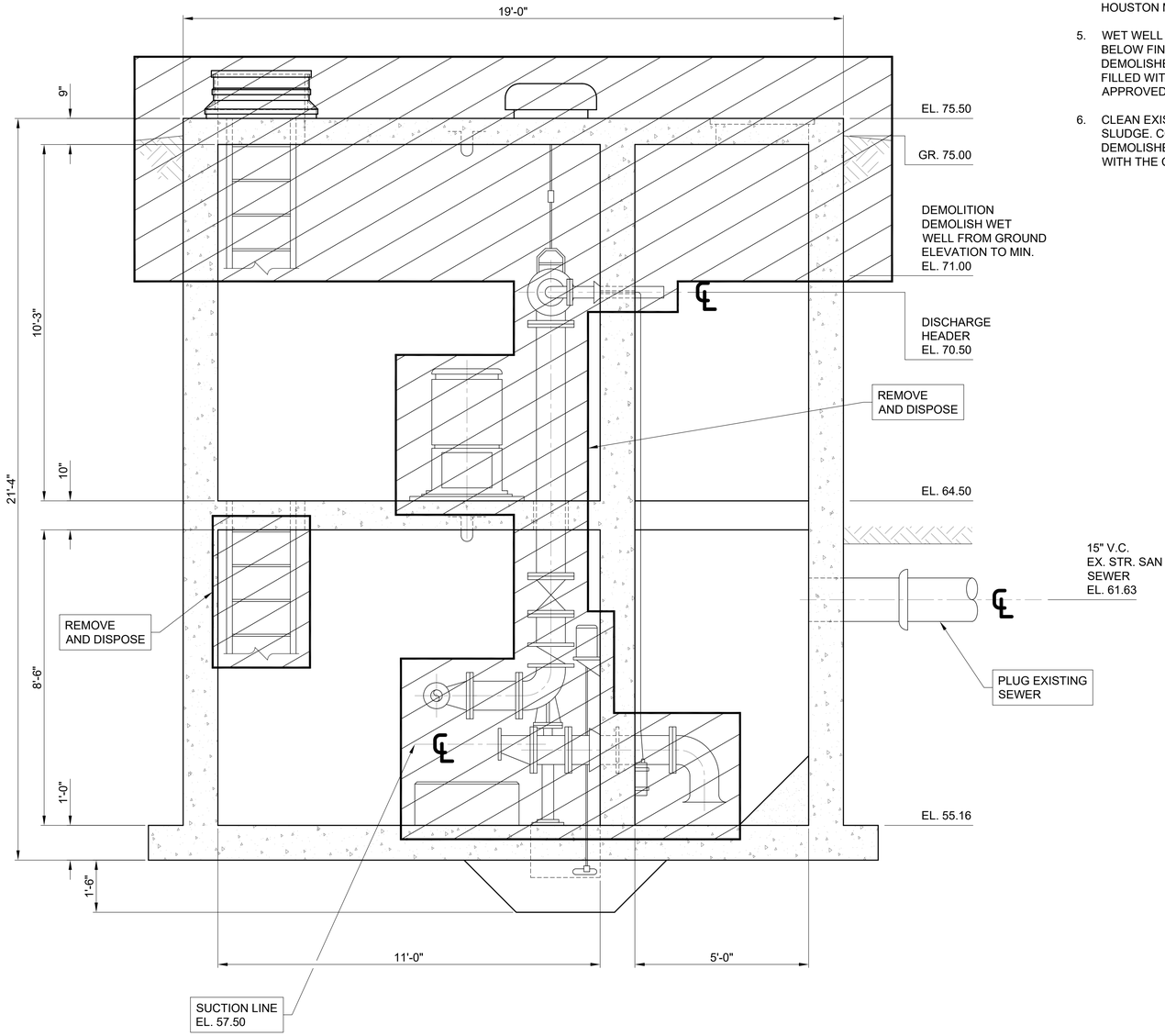
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3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. REMOVE AND SALVAGE EXISTING PUMPS, MOTORS, VALVES, PIPING, AND FITTINGS. SALVAGED ITEMS SHALL BE DELIVERED TO THE NEAREST CITY OF HOUSTON MAINTENANCE OFFICE.
5. WET WELL SHALL BE DEMOLISHED AT LEAST 4 FT BELOW FINISHED GRADE AS SHOWN ON PLAN. DEMOLISHED WET WELL SHALL BE COMPLETELY FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
6. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS AND SLUDGE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

LEGEND:

LIMITS OF LIFT STATION DEMOLITION



LA C-202 SECTION
SCALE: 1/2"=1'-0"

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:47 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Craig Alexander Perry
116345
AUGUST 22, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

LADBROOK LIFT STATION
DEMOLITION
SECTION VIEW

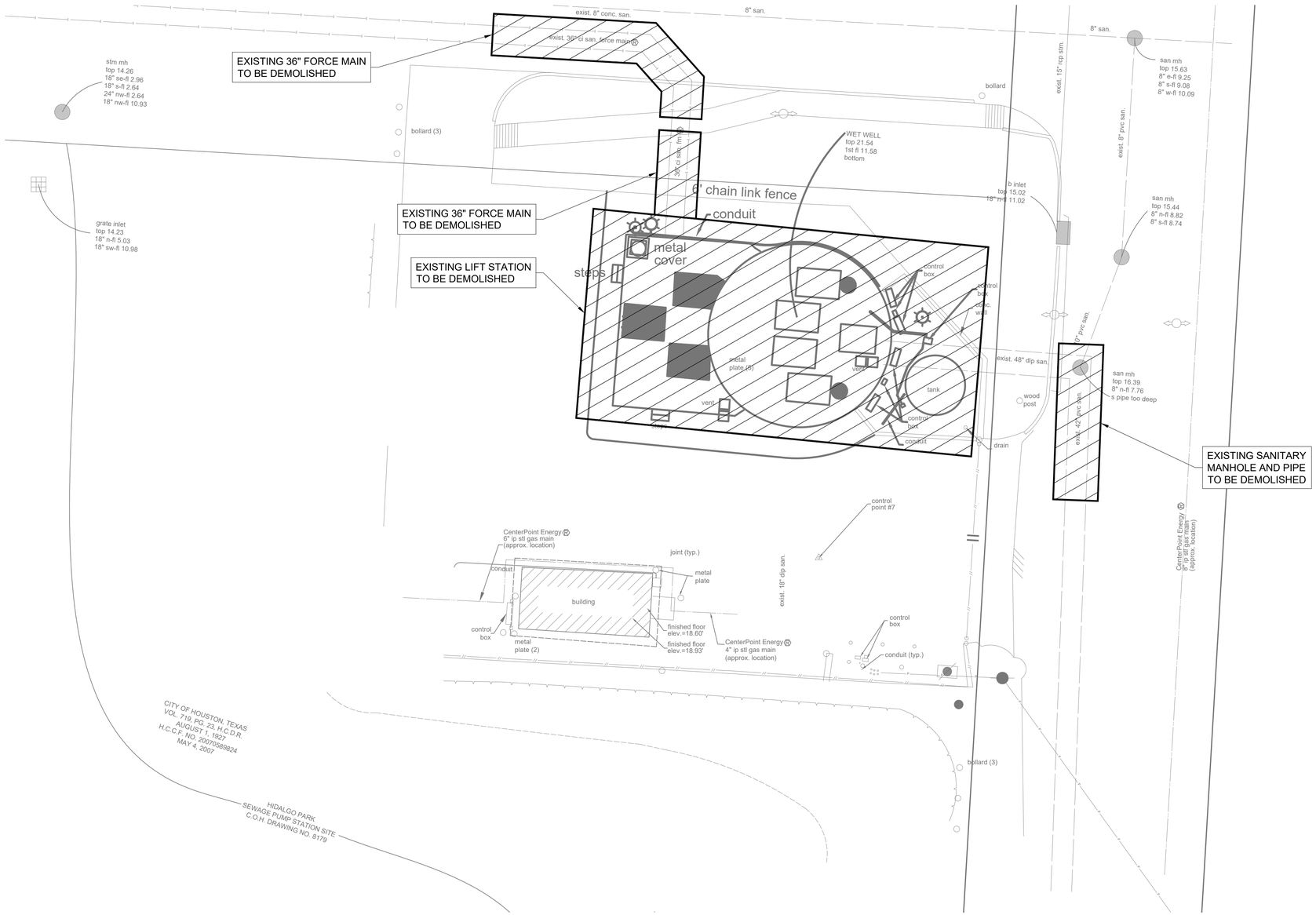
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

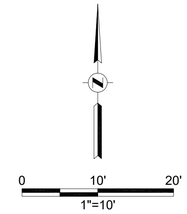
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-202
HORIZ: 1/2"=1'-0"
VERT: NONE
SHEET NO. 32 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\032 C-202.dwg





LEGEND:

LIMITS OF LIFT STATION SITE DEMOLITION

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED
ELEV.34.38 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
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NO.	DATE	REVISION	APP.

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Registered
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Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

MAGNOLIA PARK LIFT STATION
DEMOLITION
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

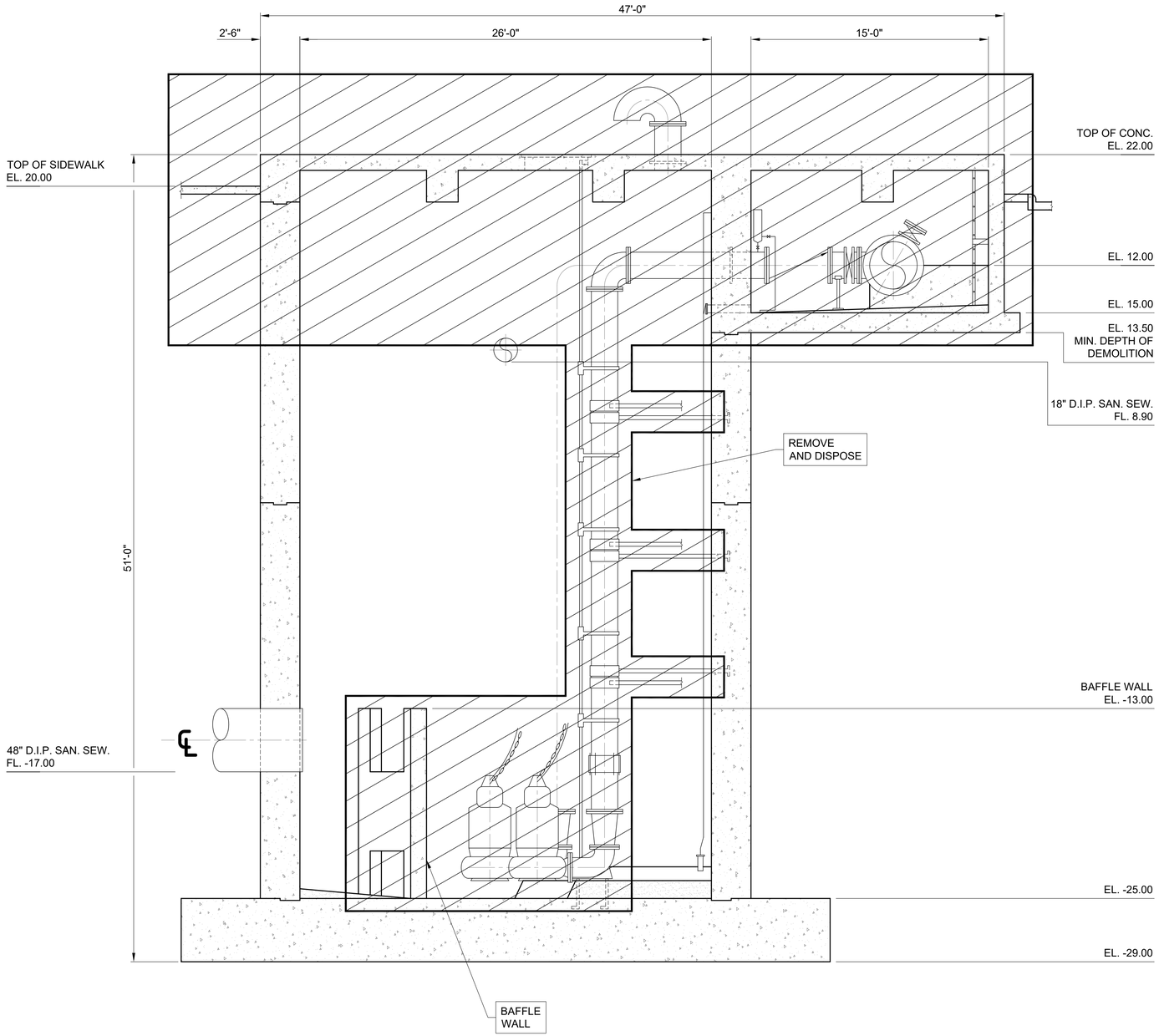
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-301	HORIZ: 1"=10' VERT: NONE
SHEET NO. 33 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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MA / C-302 SECTION
SCALE: 1/4"=1'-0"

NOTES:

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LEGEND:

LIMITS OF LIFT STATION DEMOLITION

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:48 AM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

MAGNOLIA PARK LIFT STATION
DEMOLITION
SECTION VIEW

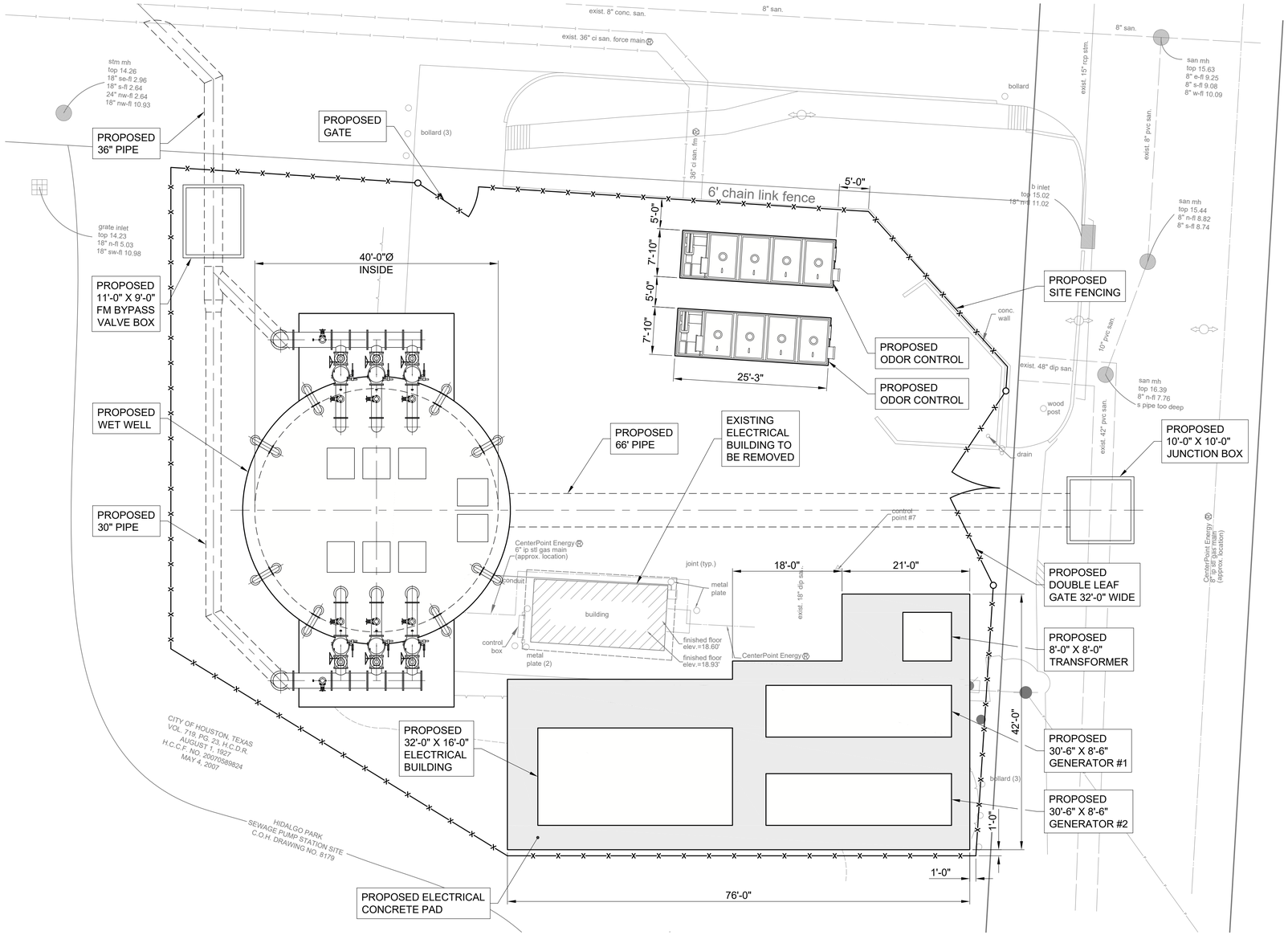
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-302
HORIZ: 1/4"=1'-0"
VERT: NONE
SHEET NO. 34 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\034 C-302.dwg



NOTE:

1. FOR SITE CONTROL POINTS TABLE SEE DRAWING NO. C-306 MAGNOLIA PARK LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES.

LEGEND:

MP-301 SITE CONTROL POINTS

0 10' 20'
1"=10'

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:48 AM PEN TABLE: Z_PUB_WKS_H.ctb

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T TEXAS/SWBT underground conduit facilities only. Signature valid for one year.

GANNETT FLEMING

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

MAGNOLIA PARK LIFT STATION
PROPOSED
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-303
HORIZ: 1"=10'
VERT: NONE
SHEET NO. 35 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED
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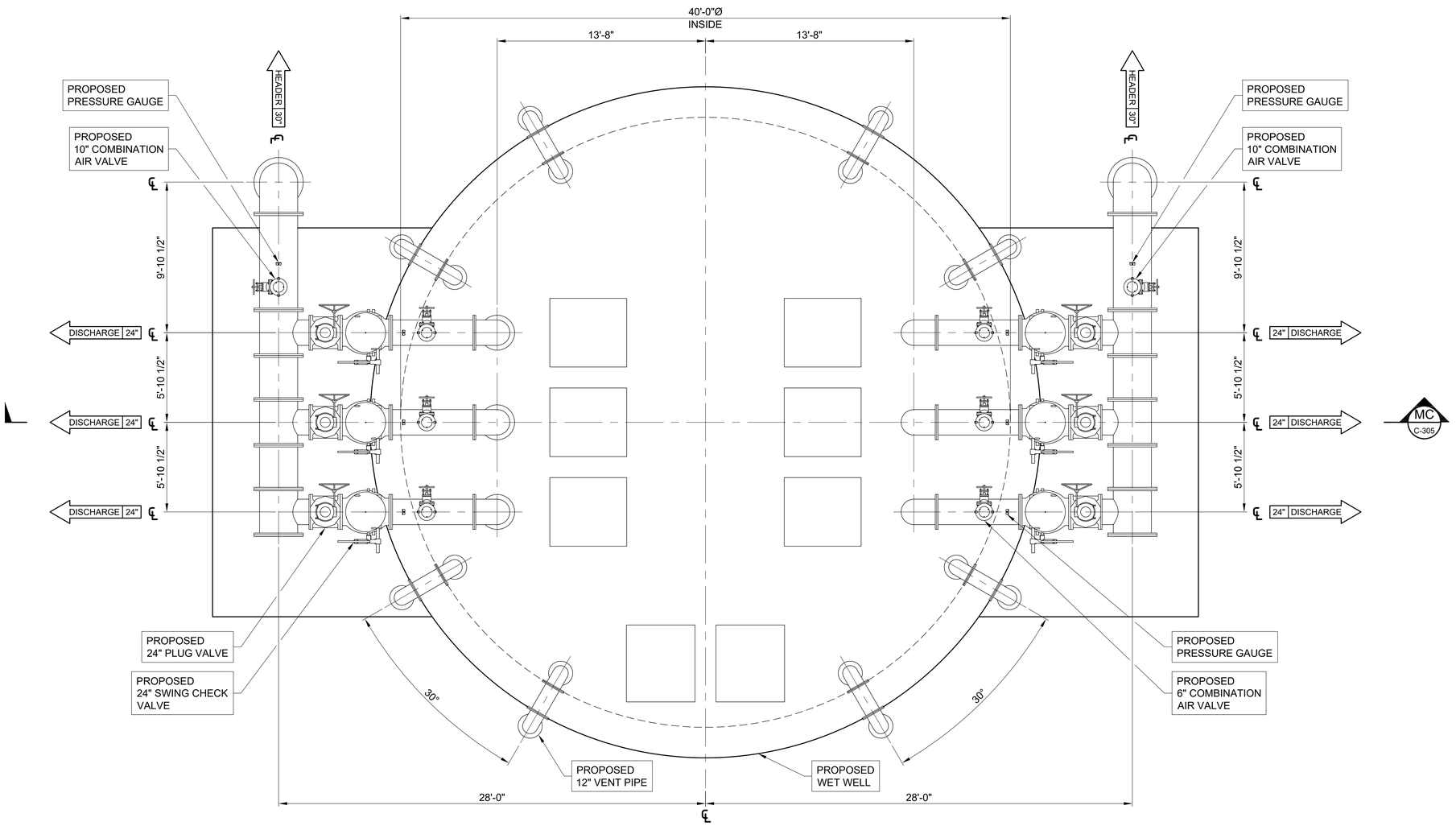
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GENERAL NOTES:

1. SEE DETAILS AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN FOR STRUCTURES.
2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE WET WELL HATCHES, PER SELECTED HATCH AND PUMP MANUFACTURER'S REQUIREMENTS.
3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO SEATING POSITION.
4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
5. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH LINK-SEAL (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
6. LABEL HATCHES WITH THE CORRESPONDING PUMP NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING WELDED TO THE HATCH. LABEL CHECK VALVES WITH THE CORRESPONDING VALVE NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING ADHERED TO THE TOP OF THE CHECK VALVE.
7. ALL ABOVE GROUND PIPING AND FITTINGS WILL BE FLANGED AND ALL BELOW GROUND PIPING AND FITTINGS WILL BE MECHANICAL JOINT.
8. SEWER MATERIALS, CONSTRUCTION, AND TESTING TO BE IN ACCORDANCE WITH THE CITY OF HOUSTON PUBLIC WORKS DEPARTMENT SPECIFICATION.
9. ALL BURIED DUCTILE IRON PIPE AND FITTINGS TO BE POLYETHYLENE WRAPPED.
10. EXPOSED FORCE MAIN PIPING TO BE DUCTILE IRON PIPE, CLASS 53 FOR EXPOSED PIPING, AND CLASS 50 FOR BURIED PIPING.
11. 3/4" WATERLINE AND WATER METER TO BE INSULATED WITH SUITABLE INSULATION MATERIAL TO PROTECT AGAINST FREEZING OR APPROVED EQUAL.
12. CONTRACTOR TO FIELD VERIFY LOCATIONS AND ELEVATIONS OF EXISTING FACILITIES PRIOR TO CONSTRUCTION OF PROPOSED FACILITIES.
13. CONTRACTOR SHALL TAKE ALL DUE PRECAUTIONS TO PROTECT EXISTING FACILITIES FROM DAMAGE. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
14. CONTRACTOR SHALL NOTIFY ALL APPROPRIATE AGENCIES OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES AFFECTED BY THIS OPERATION PRIOR TO COMMENCEMENT OF WORK.
15. CONTRACTOR TO REMOVE PLUG OR CONNECT TO EXISTING UTILITY LINES AS INDICATED ON PLANS.

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\035 C-303.dwg



MB C-304 PLAN
SCALE: 1/4"=1'-0"

NOTES:

1. SEE DETAILS AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR SHALL VERIFY DIMENSIONS DIMENSIONS NOTED ON DRAWINGS FOR PUMPS SELECTED.
3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION.
4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
5. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH SEAL-LINK (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
6. CONTRACTOR SHALL PROVIDE BLOCK-OUTS IN CONCRETE FILLETS FOR CLEARANCE AROUND LEVEL TRANSDUCER

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:48 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

MAGNOLIA PARK LIFT STATION
PROPOSED
PLAN VIEW

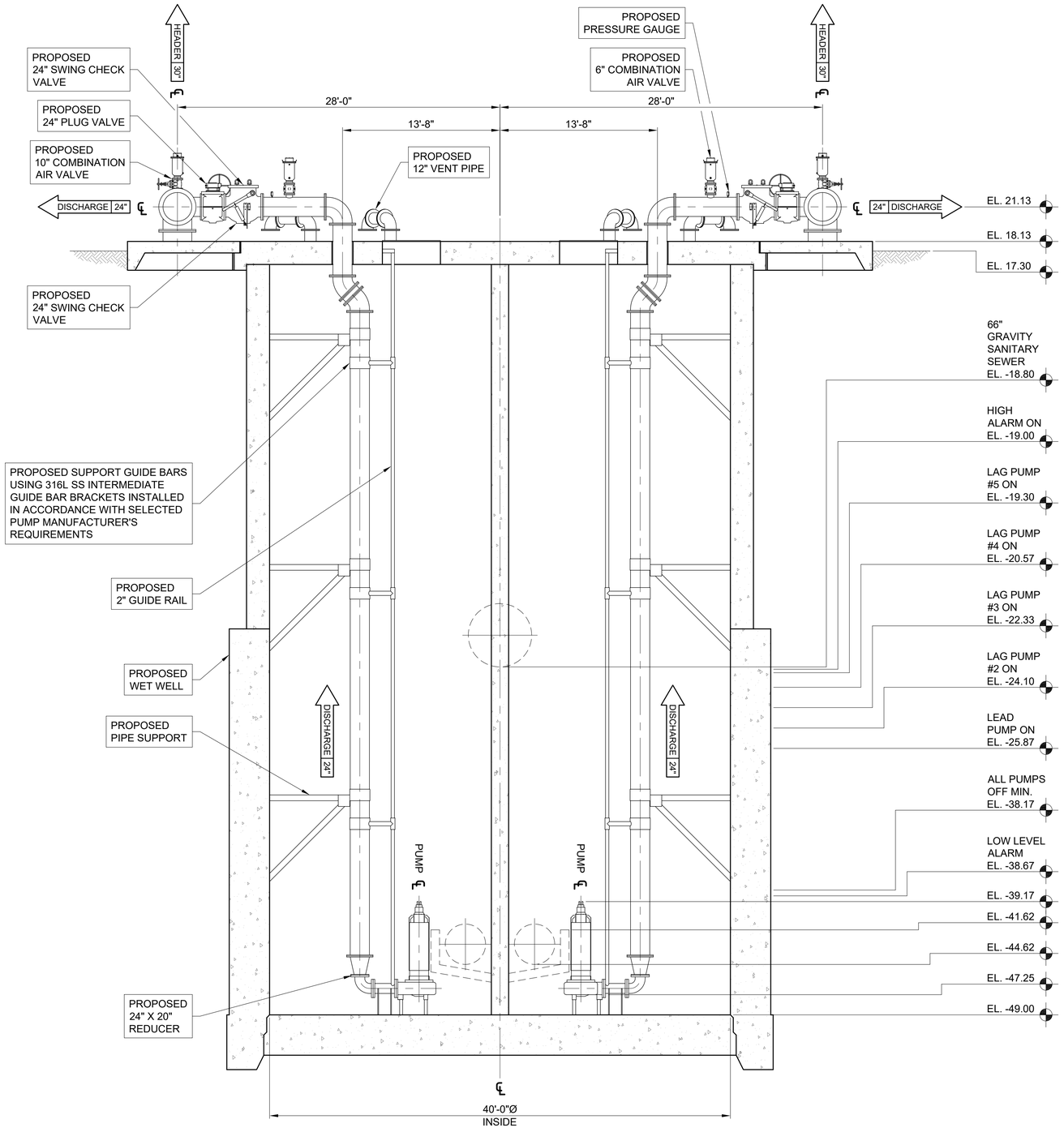
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-304
HORIZ: 1/4"=1'-0"
VERT: NONE
SHEET NO. 36 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\036 C-304.dwg



MC C-305 SECTION
SCALE: 3/16"=1'-0"

NOTES:

1. SEE STRUCTURAL SHEETS FOR INFORMATION NOT SHOWN ON STRUCTURES.
2. SUPPORT GUILD BARS SHALL BE 316 SS AND SHALL BE MOUNTED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES.
3. PIPE SUPPORTS SHALL BE 316 SS.
4. SLEEVED OPENING, SEAL WITH LINK SEAL OR APPROVED EQUAL. AT TOP OF SLAB FILL VOID AROUND SEAL WITH GROUT & RECESS APPROXIMATE 1/4" BELOW TOP OF SLAB.
5. THE CONTRACTOR PRIOR TO THE INSTALLATION OF FLOATS SHALL COORDINATE WITH THE CITY OF HOUSTON WASTE WATER OPERATIONS STAFF FOR THE FINAL DESIGN AND OF RADAR AND FLOAT APPROVED LOCATION.
6. INTERMEDIATE GUIDE BARS BRACKETS SHALL BE INSTALLED IN ACCORDANCE WITH PUMP MANUFACTURER'S REQUIREMENT.

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:49 AM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

MAGNOLIA PARK LIFT STATION
PROPOSED
SECTION VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-305
HORIZ: 3/16"=1'-0"
VERT: NONE
SHEET NO. 37 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\037 C-305.dwg

HORIZONTAL DATUM NOTE:

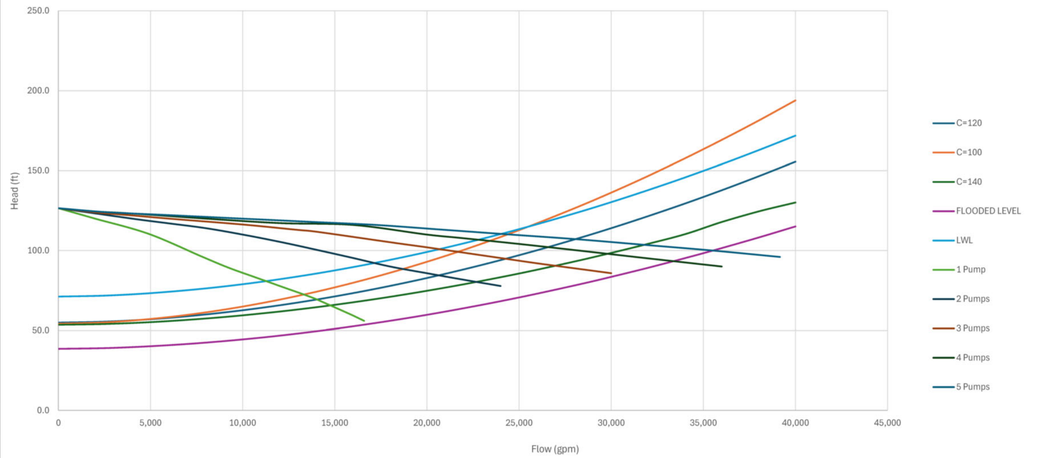
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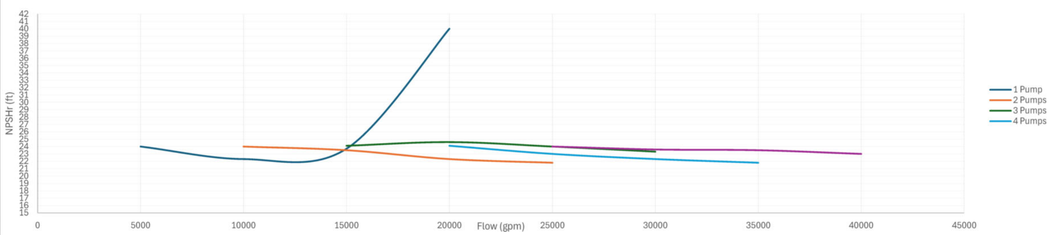
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PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2	PUMP NO. 3	PUMP NO. 4	PUMP NO. 5
MOTOR DATA :					
NOMINAL SIZE (HP)	335	335	335	335	335
MAX SPEED (RPM)	890	890	890	890	890
SOLIDS PASSAGE MIN. SPHERE (IN)	3	3	3	3	3
CAPACITY (GPM):					
DESIGN	5,535	5,535	5,535	5,535	5,535
RUNOUT	20970	20970	20970	20970	20970
DISCHARGE HEAD (FT):					
DESIGN	106.90	106.90	106.90	106.90	106.90
RUNOUT	27.11	27.11	27.11	27.11	27.11
SHUT OFF	126.5	126.5	126.5	126.5	126.5
EFFICIENCY (%) AT NO. OF PUMPS RUNNING	79.14	74.08	66.22	59.00	52.47
NSPHR (FT):					
DESIGN	24.00	24.00	24.10	24.10	24.00
RUNOUT	40.00	21.80	23.30	21.80	23.00
PUMP CYCLE TIME (MIN)	15.00				
CUMMULATIVE CAPACITY (GPM)	27678.46				

M2 C-306 PUMP DATA TABLE





M3 C-306 PUMP OPERATION CURVES

RISING LEVEL CYCLE			
WATER LEVEL DEPTH	**WATER LEVEL ELEVATION**	**ACTION**	**ALARMS/PUMP(S) IN OPERATION**
10.83	-38.17	PUMPS OFF LEVEL - NO ACTION	NONE
23.13	-25.87	LEAD PUMP TURNS ON	LEAD PUMP ON
24.90	-24.10	SECOND PUMP TURNS ON	LEAD AND 2ND PUMPS ON
26.67	-22.33	THIRD PUMP TURNS ON	LEAD, 2ND, 3RD PUMPS ON
28.43	-20.57	FOURTH PUMP TURNS ON	LEAD, 2ND, 3RD & 4TH PUMPS ON
29.70	-19.30	FIFTH PUMP TURNS ON	LEAD, 2ND, 3RD, 4TH & 5TH PUMPS ON
30.00	-19.00	HIGH WATER ALARM ON	HIGH WATER ALARM SOUND ON
30.20	-18.80	HIGH HIGH ALARM ON	HIGH HIGH WATER ALARM SOUND ON
FALLING LEVEL CYCLE			
WATER LEVEL DEPTH	**WATER LEVEL ELEVATION**	**ACTION**	**ALARM/PUMP(S) IN OPERATION**
29.70	-19.30	LEAD PUMP TURNS OFF	2ND, 3RD, 4TH, 5TH PUMPS ON
28.43	-20.57	SECOND PUMP TURNS OFF	3RD, 4TH, 5TH PUMPS ON
26.67	-22.33	THIRD PUMP TURNS OFF	4TH, 5TH PUMPS ON
24.90	-24.10	FOURTH PUMP TURNS OFF	5TH PUMP ON
23.13	-25.87	FIFTH PUMP TURNS OFF	ALL PUMPS OFF
10.83	-38.17	PUMPS OFF LEVEL - NO ACTION	NONE
10.33	-38.67	LOW LEVEL ALARM ON	LOW WATER ALARM SOUNDS ON

M1 C-306 STATION OPERATION TABLES

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Date

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

MAGNOLIA PARK LIFT STATION
PUMP OPERATION AND
SITE CONTROL POINTS TABLES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-306
HORIZ: NONE
VERT: NONE

SHEET NO. 38 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\038 C-306.dwg

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NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:49 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
Registered
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

CIVIL

MAGNOLIA PARK LIFT STATION
VALVE AND PIPE FITTING
SCHEDULE TABLES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

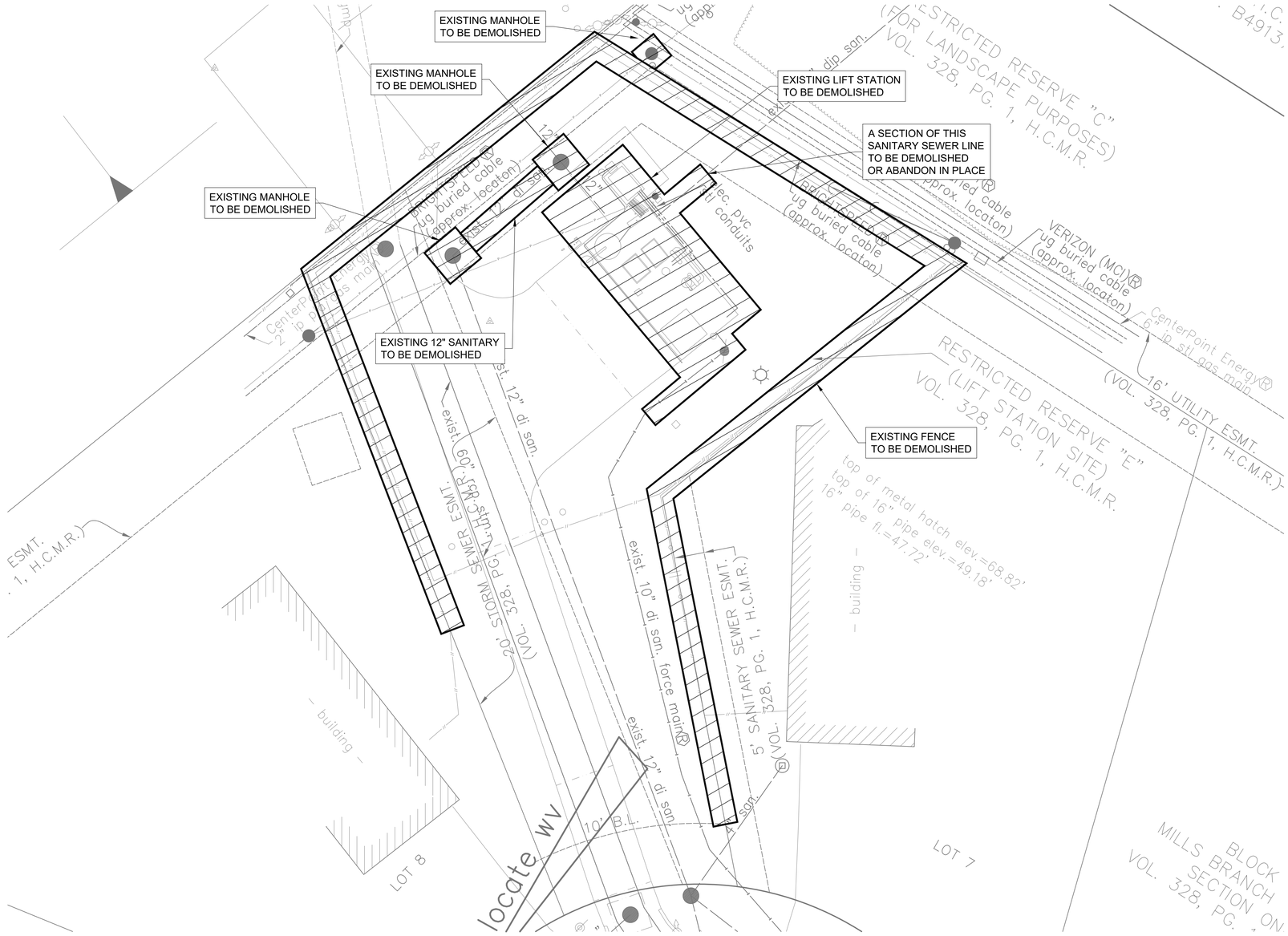
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-307	HORIZ: NONE VERT: NONE
SHEET NO. 39 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\039 C-307.dwg



0 10' 20'

1"=10'

LEGEND:

LIMITS OF LIFT STATION SITE DEMOLITION

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED
ELEV.34.38 FEET NAVD 1988, 2001 ADJUSTMENT.

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EXISTING UTILITY NOTE:

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GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. REMOVE AND SALVAGE EXISTING PUMPS, MOTORS, VALVES, PIPING, AND FITTINGS. SALVAGED ITEMS SHALL BE DELIVERED TO THE NEAREST CITY OF HOUSTON MAINTENANCE OFFICE.
5. WET WELL SHALL BE DEMOLISHED AT LEAST 4 FT BELOW FINISHED GRADE AS SHOWN ON PLAN. DEMOLISHED WET WELL SHALL BE COMPLETELY FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
6. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS AND SLUDGE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

PINE PRAIRIE LIFT STATION
DEMOLITION
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

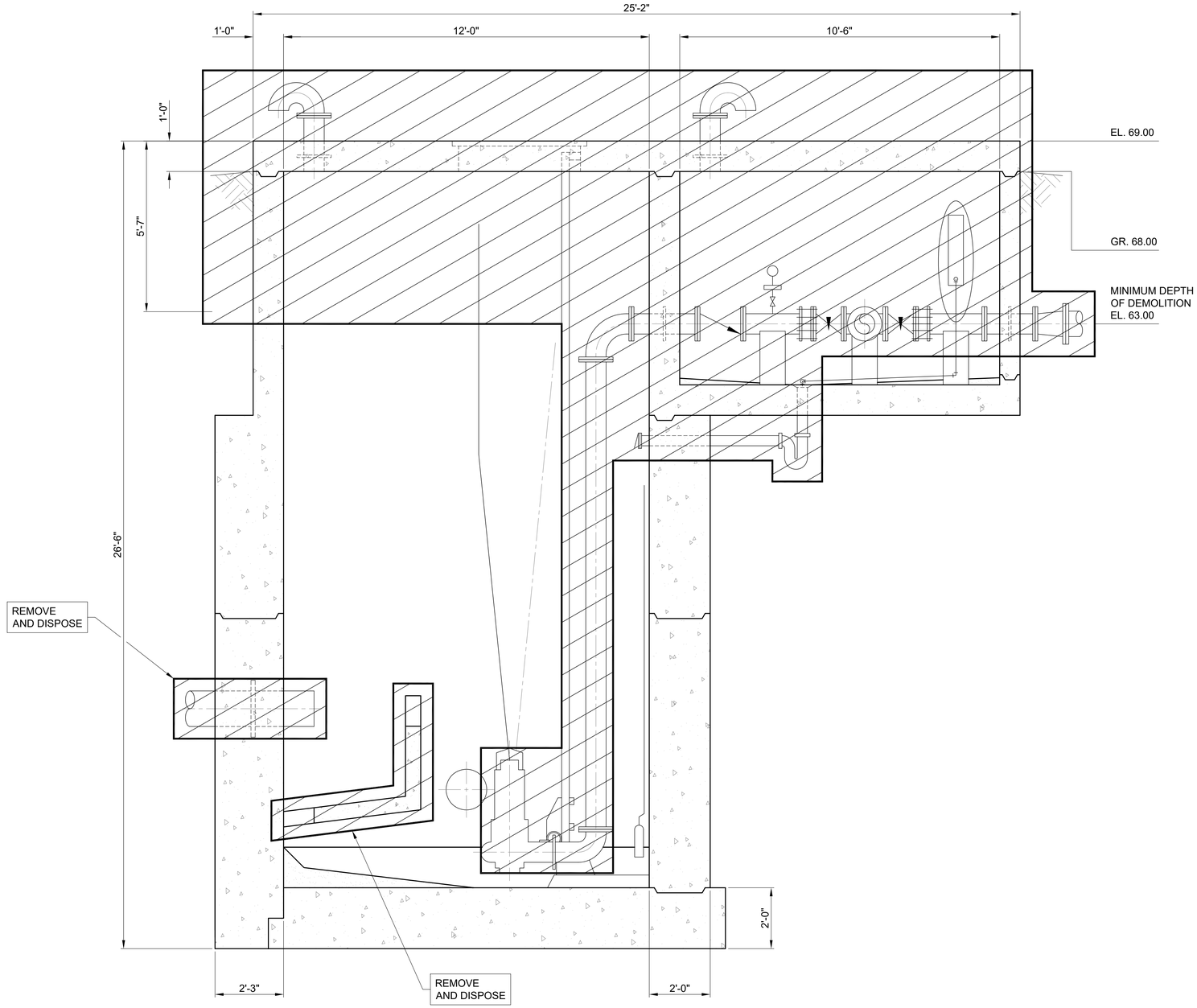
DRAWING NO. C-401

HORIZ: 1"=10'
VERT: NONE

SHEET NO. 40 OF 225

DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\040 C-401.dwg



PA C-402 SECTION
SCALE: 1/2"=1'-0"

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
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6. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS AND SLUDGE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

LEGEND:

LIMITS OF LIFT STATION DEMOLITION

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

PINE PRAIRIE LIFT STATION
DEMOLITION
SECTION VIEW

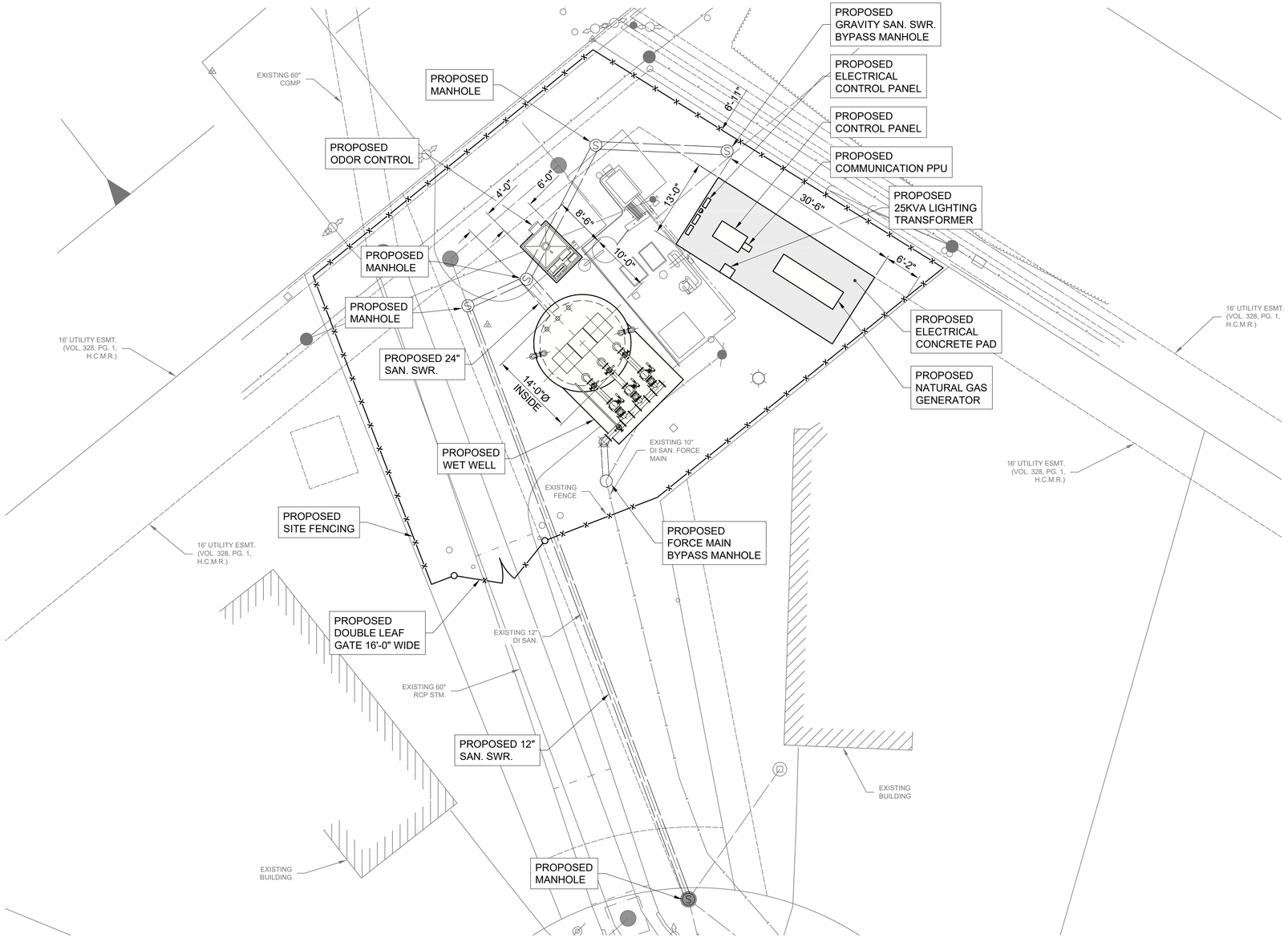
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-402
HORIZ: 1/2"=1'-0"
VERT: NONE
SHEET NO. 41 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: C:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\041 C-402.dwg



NOTE:

1. FOR SITE CONTROL POINTS TABLE SEE DRAWING NO. C-406 PINE PRAIRIE LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES.

LEGEND:

PP-401 SITE CONTROL POINTS

0 10' 20'
1"=10'

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:50 AM PEN TABLE: Z_PUB_WKS_H.ctb

NOTICE:

FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T TEXAS/SWBT underground conduit facilities only. Signature valid for one year.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

PINE PRAIRIE LIFT STATION
PROPOSED
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-403	HORIZ: 1"=10' VERT: NONE
SHEET NO. 42 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED
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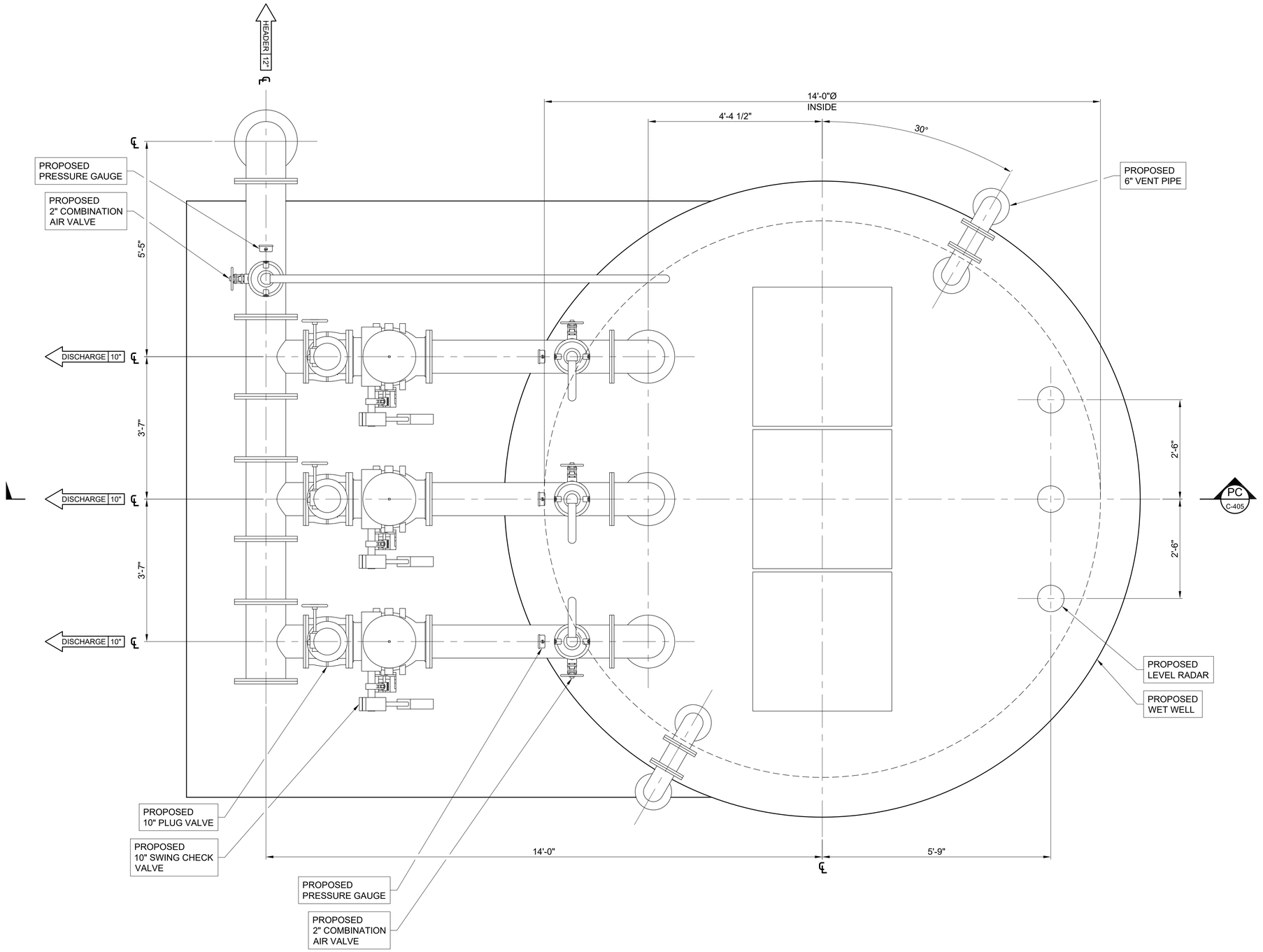
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GENERAL NOTES:

1. SEE DETAIL AND STRUCTURAL SHEETS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR TO CONFIRM THE SIZE AND LOCATION OF THE WET WELL HATCHES FOR SELECTED WET WELL AND PUMP MANUFACTURER'S REQUIREMENTS. AND PROVIDE SAFETY GRATING SYSTEM, "RETRO-GRATE" OR APPROVED EQUAL.
3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SITTING POSITION.
4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
5. LABEL HATCHES WITH THE CORRESPONDING PUMP NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING WELDED TO THE HATCH. LABEL CHECK VALVES WITH THE CORRESPONDING VALVE NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING ADHERED TO THE TOP OF THE CHECK VALVE.

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\042 C-403.dwg



PB C-404 PLAN
SCALE: 3/4"=1'-0"

NOTES:

1. SEE DETAILS AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR SHALL VERIFY DIMENSIONS DIMENSIONS NOTED ON DRAWINGS FOR PUMPS SELECTED.
3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION.
4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
5. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH SEAL-LINK (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
6. CONTRACTOR SHALL PROVIDE BLOCK-OUTS IN CONCRETE FILLETS FOR CLEARANCE AROUND LEVEL TRANSDUCER

NO.	DATE	REVISION	APP.

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GANNETT FLEMING
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3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9575

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

PINE PRAIRIE LIFT STATION
PROPOSED
PLAN VIEW

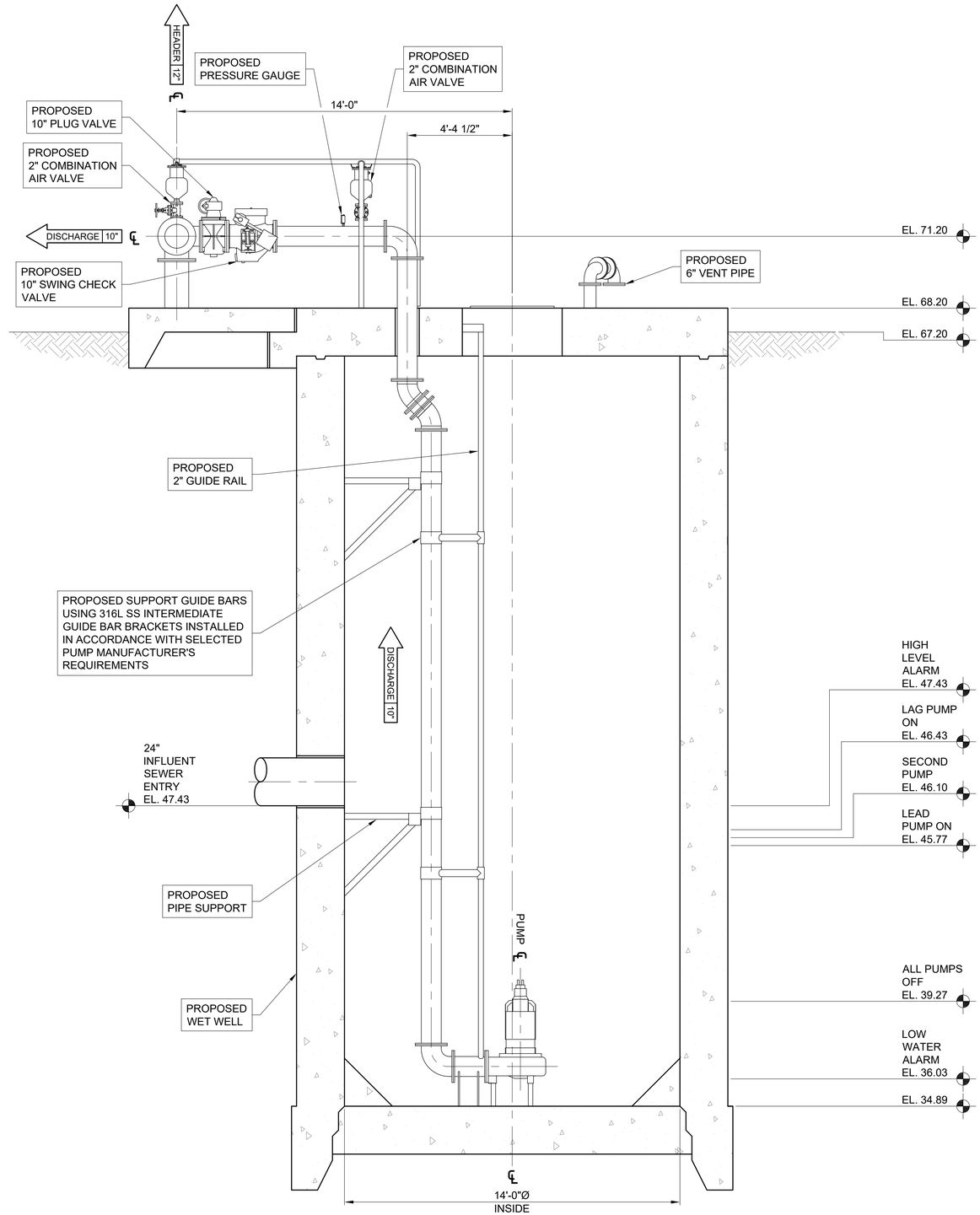
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-404
HORIZ: 3/4"=1'-0"
VERT: NONE
SHEET NO. 43 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\043 C-404.dwg



PC C-405 SECTION
SCALE: 3/8"=1'-0"

NOTES:

1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. PUMP ANCHOR BOLTS ARE TO BE ADHESIVE TYPE, AND EMBEDDED IN CONCRETE SLAB, CONTRACTOR TO SUBMIT DESIGN OF ANCHOR BOLTS AND PATTERN, INCLUDING CALCULATIONS, DURING SHOP DRAWING SUBMISSION.
3. CONTRACTOR TO PROVIDE ADHESIVE IN LIEU OF WEDGE ANCHORS FOR ALL SUBMERGED CONDITIONS. AND SUBMIT DESIGN OF ANCHOR BOLTS DURING SHOP DRAWING SUBMISSION.
4. ALL PIPING IN WET WELL SHALL BE FLANGED, NO FLANGED COUPLING ADAPTORS, OR VICTAULIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE THE WET WELL.
5. SUPPORT GUIDE BARS SHALL BE 316 SS AND INSTALLED IN ACCORDANCE WITH PUMP MANUFACTURER'S REQUIREMENTS.
6. SLEEVED OPENING, SEAL WITH LINK SEAL OR APPROVED EQUAL. AT TOP OF SLAB FILL VOID AROUND SEAL WITH GROUT AND RECESS APPROXIMATELY 1/4" BELOW TOP OF SLAB.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

PINE PRAIRIE LIFT STATION
PROPOSED
SECTION VIEW

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-405

HORIZ: 3/8"=1'-0"
VERT: NONE

SHEET NO. 44 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

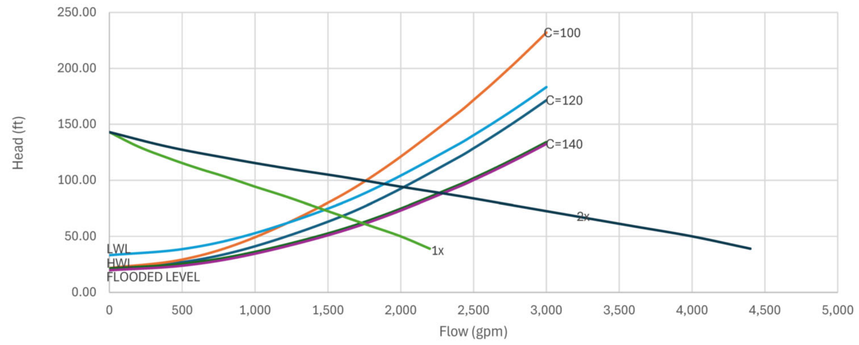
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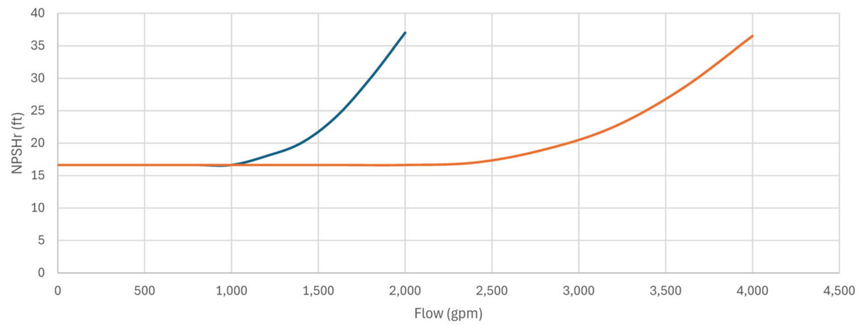
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PUMP CHARACTERISTICS	PUMP No. 1	PUMP No. 2
MOTOR DATA :		
NOMINAL SIZE (HP)	45	45
MAX SPEED (RPM)	1,775	1,775
SOLIDS PASSAGE		
MIN. SPHERE (IN)	6	6
CAPACITY (GPM)		
DESIGN	995	995
RUNOUT	2,304.83	2,304.83
DISCHARGE HEAD (FT)		
DESIGN	88.30	88.30
RUNOUT	88.30	88.30
SHUT OFF	144	144
EFFICIENCY (%)		
DESIGN	74.54	74.54
NSPHR (FT)		
DESIGN	16.36	16.36
RUNOUT	16.36	16.36
PUMP CYCLE TIME (MIN)	6	6
CUMMULATIVE CAPACITY (GPM)		2700

P2 C-406 PUMP DATA TABLE





P3 C-406 PUMP OPERATION CURVES

RISING LEVEL CYCLE			
WATER LEVEL DEPTH	WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
4.67	46.67	PUMPS OFF LEVEL- NO ACTION	ALL PUMPS ARE OFF
5.00	47.00	LEAD PUMP TURNS ON	LEAD PUMP ON
5.33	47.33	2ND PUMP TURNS ON	LEAD AND 2ND PUMPS ON
5.66	47.66	3RD PUM TURNS ON	LEAD, 2ND, & 3RD PUMPS ON
5.99	47.99	HIGH WATER ALARM ON	HIGH WATER ALARM SOUND
6.82	48.82	HIGH HIGH LEVEL ALARM (FLOAT ON LEVEL)	ALL PUMPS ON (FLOATS)
FALLING LEVEL CYCLE			
WATER LEVEL DEPTH	WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
4.67	46.67	FLOAT OFF LEVEL	ALL PUMPS OFF (FLOATS)
5.99	47.99	HIGH WATER LEVEL ALARM	LEAD, 2ND, & 3RD PUMPS ON
5.66	47.66	LEAD PUMP TURNS OFF	2ND & 3RD PUMPS ON
5.33	47.33	2ND PUMP TURNS OFF	3RD PUMP ON
5.00	47.00	3RD PUMP TURNS OFF	ALL PUMPS STOPPED-STANDBY PUMP SWITCHES TO LEAD PUMP
4.67	46.67	LOW LEVEL ALARM	

P1 C-406 STATION OPERATION TABLES

NO.	DATE	REVISION	APP.

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CIVIL

PINE PRAIRIE LIFT STATION
PUMP OPERATION AND
SITE CONTROL POINTS TABLES

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HOUSTON PUBLIC WORKS

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WASTE WATER
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STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-406
HORIZ: NONE
VERT: NONE
SHEET NO. 45 OF 225
DRAWING SCALE
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WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-407

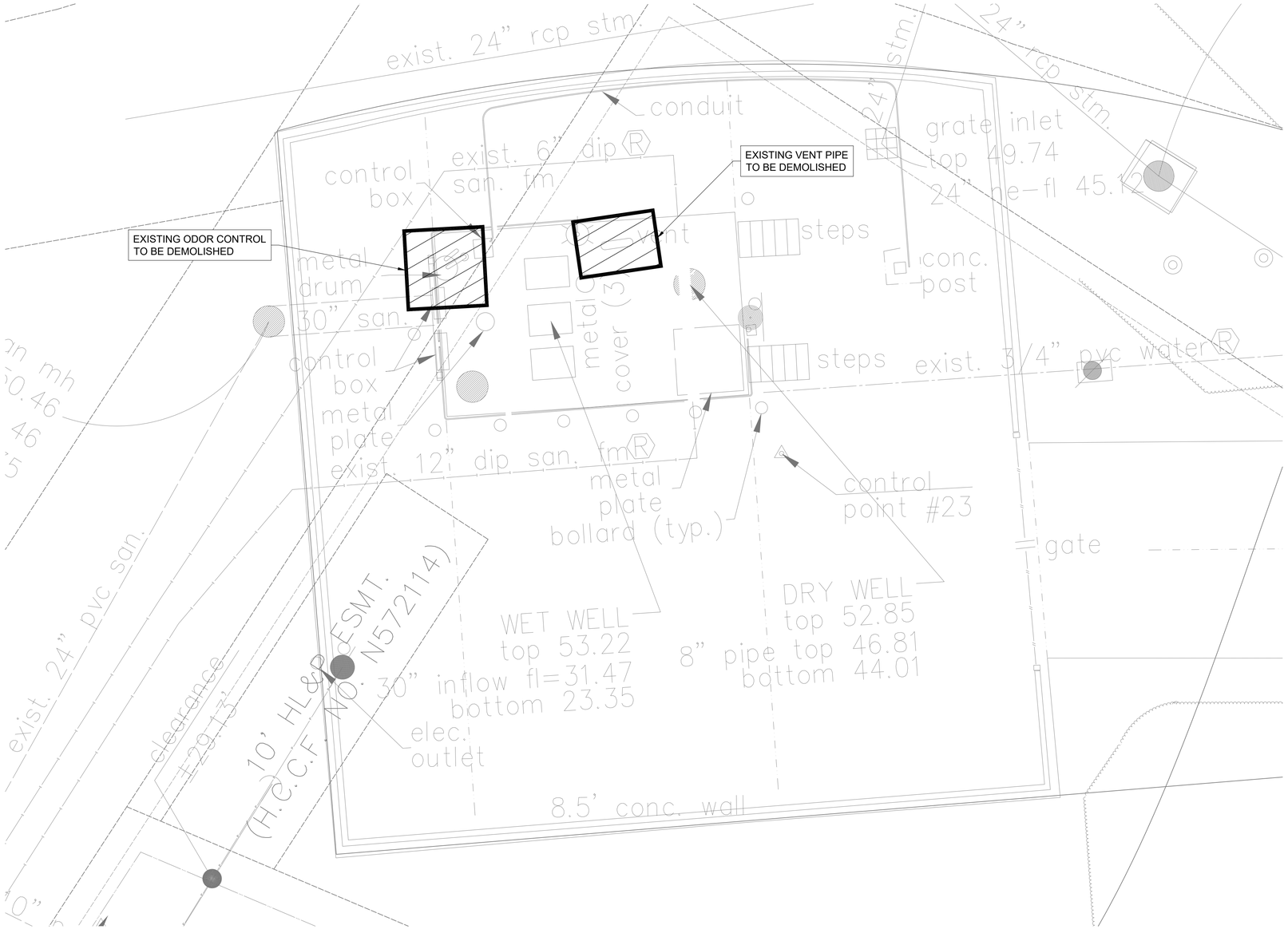
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VERT: NONE

SHEET NO. 46 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\046 C-407.dwg



0 5' 10'

1"=5'

LEGEND:

LIMITS OF LIFT STATION SITE DEMOLITION

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED
ELEV.34.38 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

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NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:51 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
Printed
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

STATELY OAKS LIFT STATION
DEMOLITION
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-501

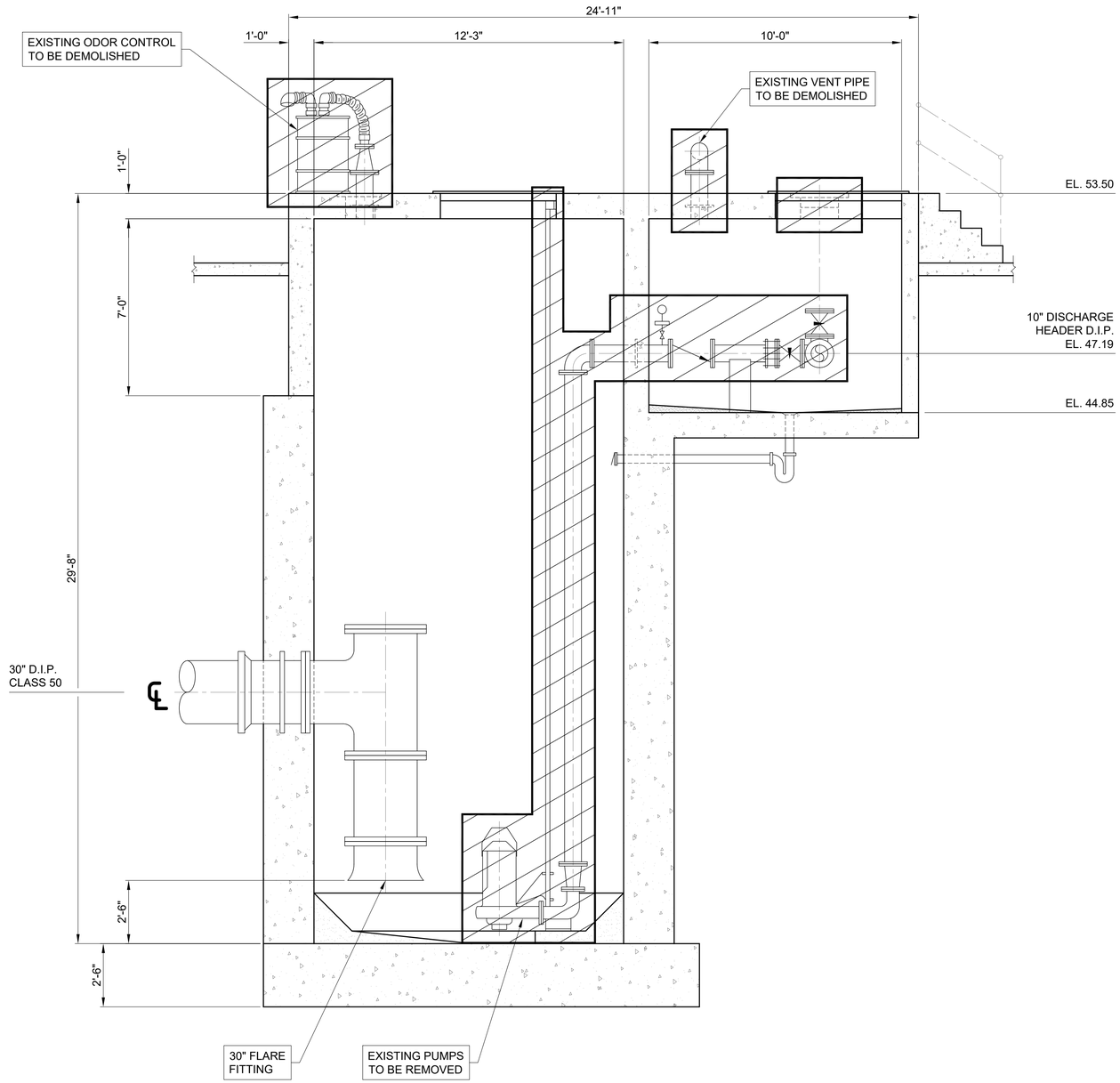
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VERT: NONE

SHEET NO. 47 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\047 C-501.dwg



SA C-502 SECTION
SCALE: 3/8"=1'-0"

NOTES:

1. CONTRACTOR TO FIELD VERIFY EXACT EXISTING CONDITIONS PRIOR TO ANY DEMOLITION WORK, REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONSULT WITH ENGINEER FOR PHASES OR SEQUENCES OF DEMOLITION.
3. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.
4. REMOVE AND SALVAGE EXISTING PUMPS, MOTORS, VALVES, PIPING, AND FITTINGS. SALVAGED ITEMS SHALL BE DELIVERED TO THE NEAREST CITY OF HOUSTON MAINTENANCE OFFICE.
5. WET WELL SHALL BE DEMOLISHED AT LEAST 4 FT BELOW FINISHED GRADE AS SHOWN ON PLAN. DEMOLISHED WET WELL SHALL BE COMPLETELY FILLED WITH ACCEPTABLE FLOWABLE FILL APPROVED BY THE ENGINEER.
6. CLEAN EXISTING WET WELL OF ACCUMULATED SLUDGE. CONTRACTOR SHALL DISPOSE ALL DEMOLISHED DEBRIS AND SLUDGE IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARDS.

LEGEND:

LIMITS OF LIFT STATION DEMOLITION

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:51 AM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

STATELY OAKS LIFT STATION
DEMOLITION
SECTION VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-502

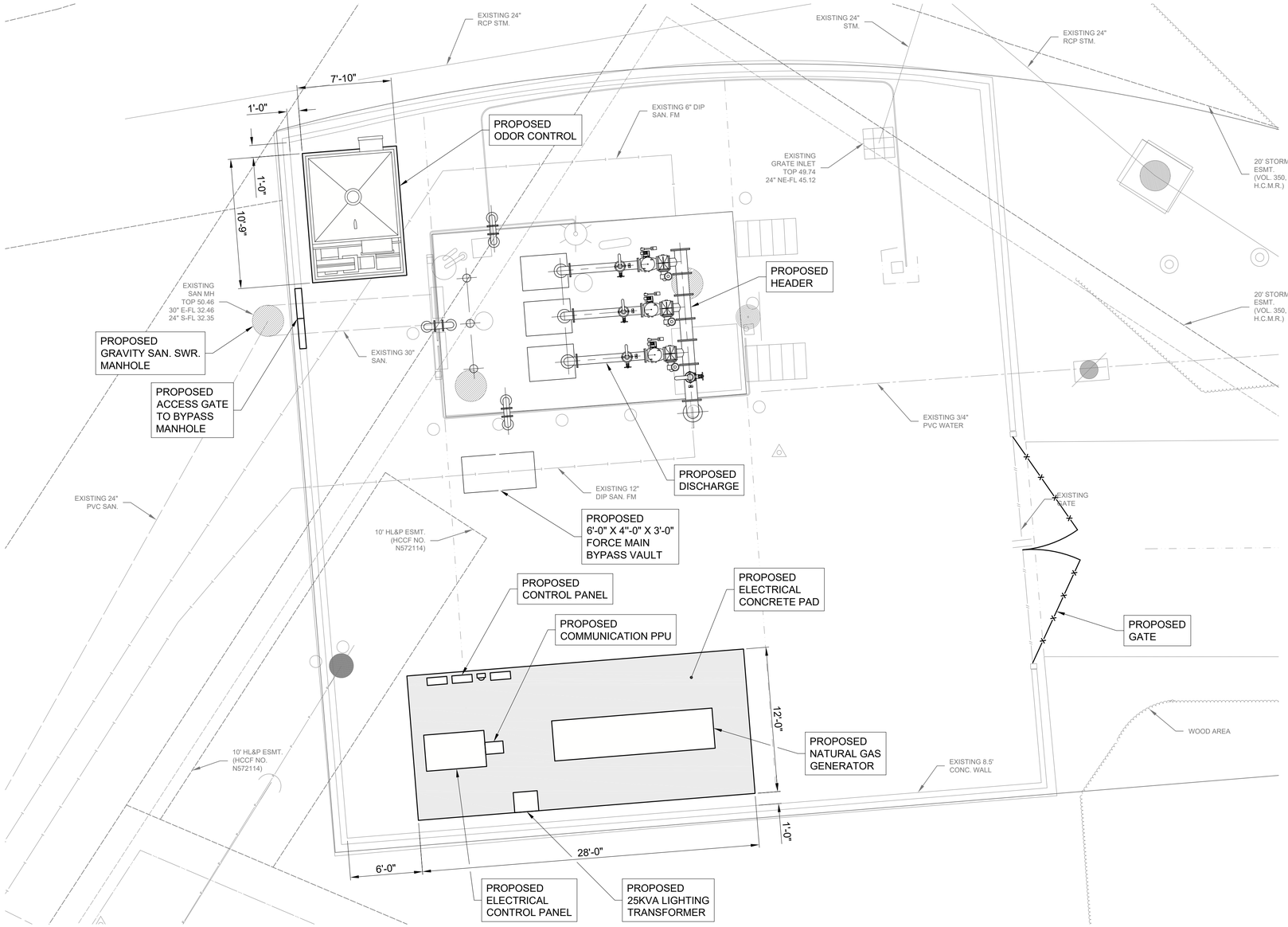
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VERT: NONE

SHEET NO. 48 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\048 C-502.dwg



NOTE:

1. FOR SITE CONTROL POINTS TABLE SEE DRAWING NO. C-506 STATELY OAKS LIFT STATION PUMP OPERATION AND SITE CONTROL POINTS TABLES.

LEGEND:

SO-501 SITE CONTROL POINTS

0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

PLOTTED: 8/22/2025 1:51 AM

NOTICE:
FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 811

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY. (This signature verifies existing underground facilities – not to be used for conflict verification)

Signature valid for six months.

Date

Approved for AT&T TEXAS/SWBT underground conduit facilities only. Signature valid for one year.

GANNETT FLEMING

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3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-9570

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

STATELY OAKS LIFT STATION
PROPOSED
SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-503

HORIZ: 1"=5'
VERT: NONE

SHEET NO. 49 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED
ELEV.34.38 FEET NAVD 1988, 2001 ADJUSTMENT.

HORIZONTAL DATUM NOTE:

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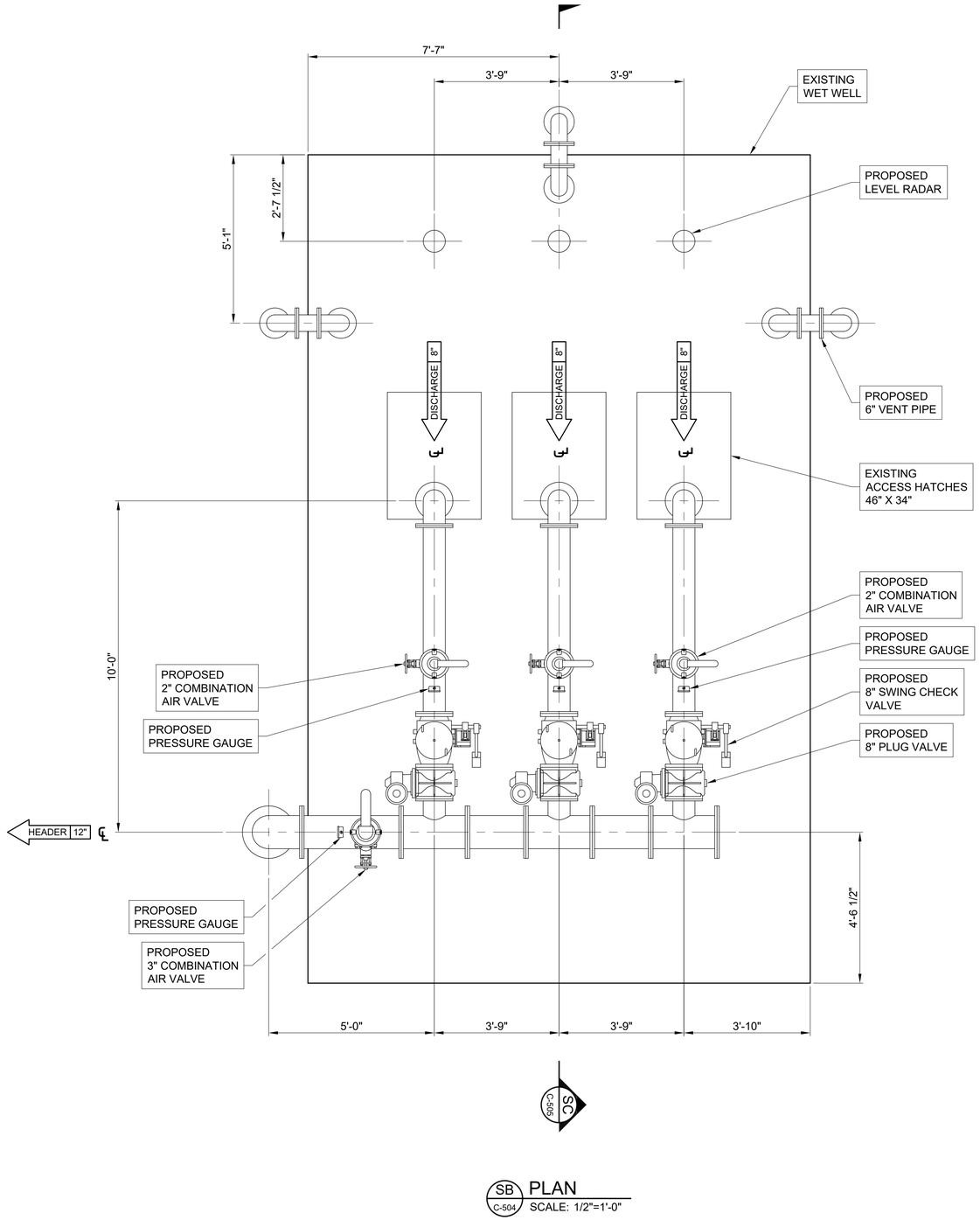
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GENERAL NOTES:

1. SEE DETAIL AND STRUCTURAL SHEETS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR TO CONFIRM THE SIZE AND LOCATION OF THE WET WELL HATCHES FOR SELECTED WET WELL AND PUMP MANUFACTURER'S REQUIREMENTS. AND PROVIDE SAFETY GRATING SYSTEM, "RETRO-GRATE" OR APPROVED EQUAL.
3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SITTING POSITION.
4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
5. LABEL HATCHES WITH THE CORRESPONDING PUMP NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING WELDED TO THE HATCH. LABEL CHECK VALVES WITH THE CORRESPONDING VALVE NUMBER USING A 12-INCH BY 12-INCH 316SS PLATE ENGRAVED WITH 6-INCH LETTERING ADHERED TO THE TOP OF THE CHECK VALVE.
6. ALL ABOVE PIPING SHALL BE FLANGED, AND ALL BELOW PIPING SHALL BE MECHANICAL JOINT.
7. FOR PUMP ACCESS HATCHES, CONTRACTOR SHALL PROVIDE A SAFETY GRATING SYSTEM, "RETRO-GRATE" OR APPROVED EQUAL.

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\049 C-503.dwg



SB C-505 SC

SB C-504 PLAN
SCALE: 1/2"=1'-0"

NOTES:

1. SEE DETAILS AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. CONTRACTOR SHALL VERIFY DIMENSIONS DIMENSIONS NOTED ON DRAWINGS FOR PUMPS SELECTED.
3. INSTALL PLUG VALVES TO OPEN UPWARD AND TO CLOSE TO A SEATING POSITION.
4. INSTALL CHECK VALVES SO THAT THE WEIGHT LEVER POSITION IS APPROXIMATELY 45° BELOW THE VALVE HORIZONTAL CENTER LINE IN THE CLOSED POSITION; AND APPROXIMATELY 45° ABOVE THE VALVE HORIZONTAL CENTER LINE IN THE FULL OPEN POSITION.
5. SLEEVED OR CORED DISCHARGE PIPE OPENINGS SEALED WITH SEAL-LINK (OR APPROVED EQUAL) MAY BE SUBSTITUTED FOR POURED IN PLACE WALL PIPES TO ACCOMMODATE CONSTRUCTION METHOD.
6. CONTRACTOR SHALL PROVIDE BLOCK-OUTS IN CONCRETE FILLETS FOR CLEARANCE AROUND LEVEL TRANSDUCER

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:51 AM PEN TABLE: Z_PUB_WKS_H.ctb

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Craig Alexander Perry
116345
AUGUST 22, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

STATELY OAKS LIFT STATION
PROPOSED
PLAN VIEW

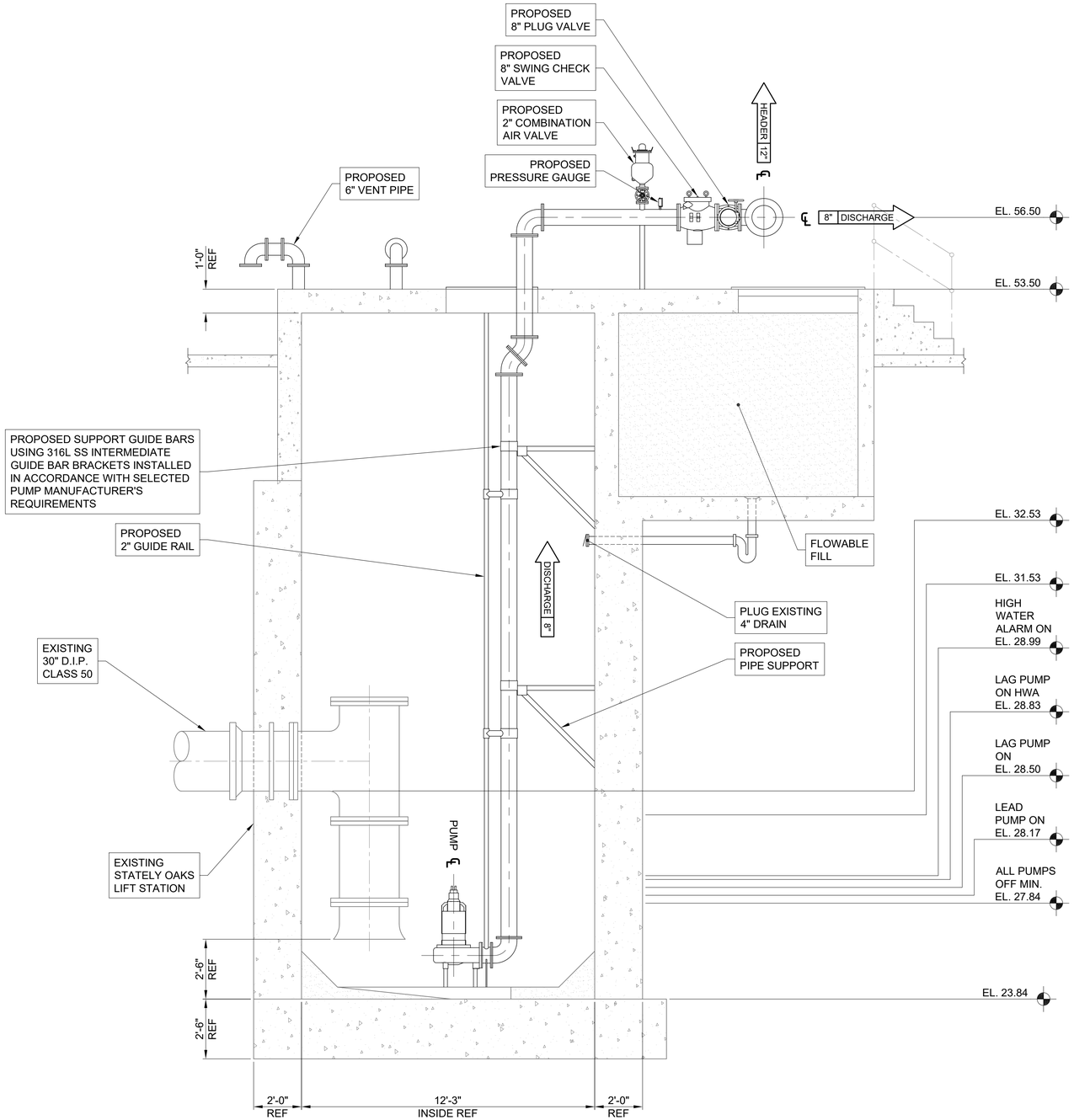
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-504
HORIZ: 1/2"=1'-0"
VERT: NONE
SHEET NO. 50 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\050 C-504.dwg



SC C-505 SECTION
SCALE: 3/8"=1'-0"

NOTES:

1. SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
2. PUMP ANCHOR BOLTS ARE TO BE ADHESIVE TYPE, AND EMBEDDED IN CONCRETE SLAB. CONTRACTOR TO SUBMIT DESIGN OF PUMP ANCHOR BOLTS AND PATTERN INCLUDING CALCULATIONS, DURING SHOP DRAWING SUBMISSION.
3. CONTRACTOR TO PROVIDE ADHESIVE ANCHORS IN LIEU OF WEDGE ANCHORS FOR ALL SUBMERGED CONDITIONS. AND SUBMIT DESIGN OF ANCHOR BOLTS DURING SHOP DRAWING SUBMISSION.
4. ALL PIPING IN THE WET WELL SHALL BE FLANGED. NO FLANGED COUPLING ADAPTORS OR VICTAULIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE THE WET WELL.
5. CONTRACTOR SHALL PLUG ABANDONED PIPING AND FILL ABANDONED VALVE VAULT WITH SUITABLE FLOWABLE FILL MATERIAL.
6. DISCHARGE PIPING SUPPORTS SHALL BE SPACED ACCORDING TO SELECTED PUMP MANUFACTURER'S RECOMMENDATIONS. AND MUST BE A MINIMUM OF TWO DISCHARGE PIPING SUPPORTS.
7. SUPPORT GUIDE BARS SHALL BE 316SS AND SHALL BE INSTALLED IN ACCORDANCE WITH SELECTED PUMP MANUFACTURER'S REQUIREMENTS.

NO.	DATE	REVISION	APP.

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3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

STATELY OAKS LIFT STATION
PROPOSED
SECTION VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-505	HORIZ: 3/8"=1'-0" VERT: NONE
SHEET NO. 51 OF 225	DRAWING SCALE

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HORIZONTAL DATUM NOTE:

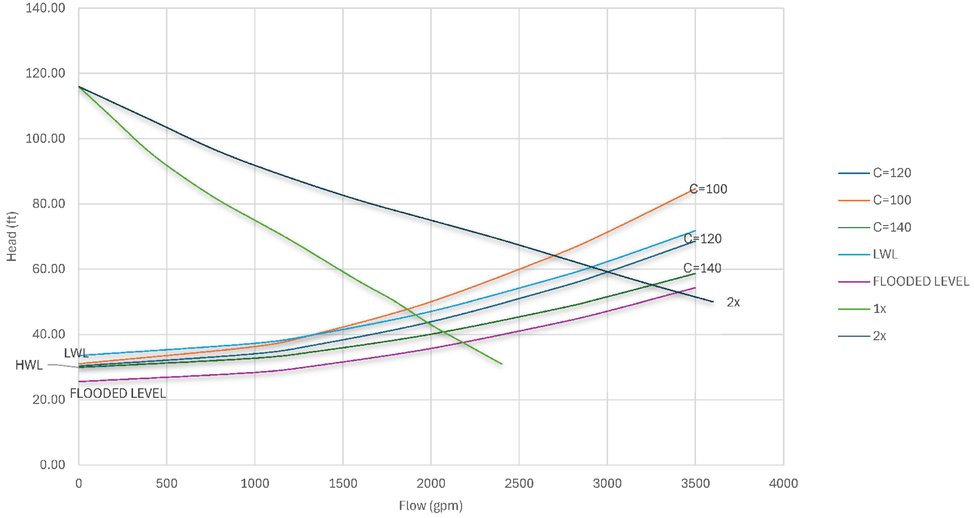
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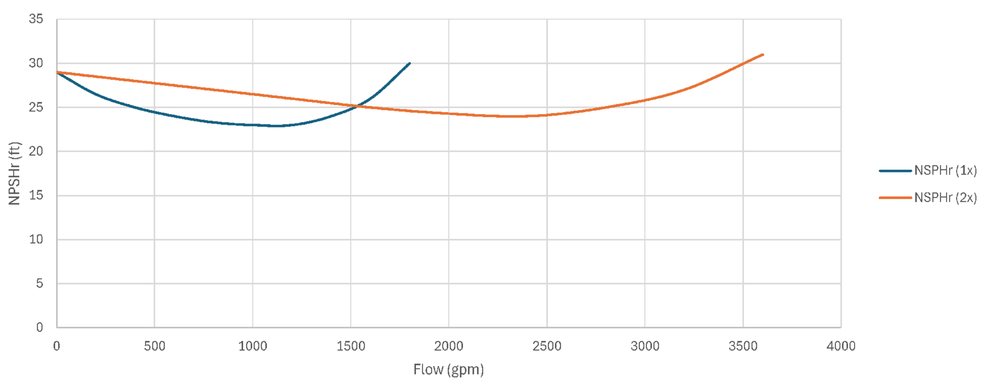
NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:52 AM PEN TABLE: Z_PUB_WKS_H.ctb

PUMP CHARACTERISTICS	PUMP No. 1	PUMP No. 2
MOTOR DATA :		
NOMINAL SIXZE (HP) MAX	34	34
SPEED (RPM)	1,765	1,765
SOLIDS PASSAGE MIN.		
SPHERE (IN)	6	6
CAPACITY (GPM)		
DESIGN	1,350	1,350
RUNOUT	2,498.97	2,498.97
DISCHARGE HEAD (FT)		
DESIGN	59.25	59.25
RUNOKUT	28	25
SHUT OFF	117	117
EFFICIENCY (%)		
DESIGN	79.43	79.43
NSPHR (FT)		
DESIGN	23.27	23.27
RUNOUT	23.27	23.27
PUMP CYCLE TIME (MIN)	6	
CUMMULATIVE CAPACITY (GPM)	2,700	

S2 C-506 PUMP DATA TABLE





S3 C-506 PUMP OPERATION CURVES

RISING LEVEL CYCLE			
WATER LEVEL DEPTH	WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
3.83	27.67	PUMPS OFF LEVEL-NO ACTION	ALL PUMPS ARE OFF
5.33	29.17	LEAD PUMP TURNS ON	LEAD PUMP ON
5.67	29.51	2ND PUMP TURNS ON	LEAD & 2ND PUMPS ON
6.00	29.84	3RD PUMP TURNS ON	LEAD, 2ND, & 3RD PUMPS ON
6.33	30.17	HIGH WATER ALARM ON	HIGH WATER ALARM SOUND
8.69	32.53	HIGH HIGH LEVEL ALARM (FLOAT ON LEVEL)	ALL PUMPS ON (FLOATS)
FALLING LEVEL CYCLE			
WATER LEVEL DEPTH	WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
5.00	28.84	FLOAT OFF LEVEL	ALL PUMPS OFF (FLOATS)
6.00	29.84	HIGH WATER LEVEL ALARM OFF	LEAD, 2ND, & 3RD PUMPS ON
5.64	29.51	LEAD PUMP TURNS OFF	2ND & 3RD PUMPS ON
5.33	29.17	2ND PUMP TURNS OFF	3RD PUMP ON
5.00	28.84	3RD PUMP TURNS OFF	ALL PUMPS STOPPED- STANDBY PUMP SWITCHES TO LEAD PUMP
4.33	28.17	LOW LEVEL ALARM	

S1 C-506 STATION OPERATION TABLES

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

STATELY OAKS LIFT STATION
PUMP OPERATION AND
SITE CONTROL POINTS TABLES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-506	HORIZ: NONE VERT: NONE
SHEET NO. 52 OF 225	DRAWING SCALE

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

STATELY OAKS LIFT STATION
VALVE AND PIPE FITTING
SCHEDULE TABLES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

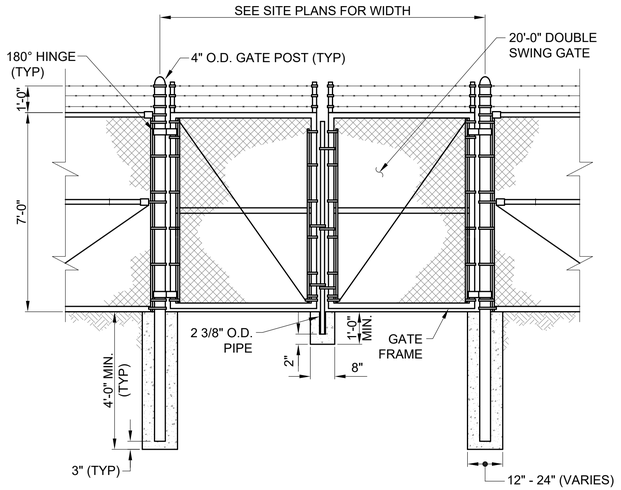
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SHEET NO. 53 OF 225	DRAWING SCALE

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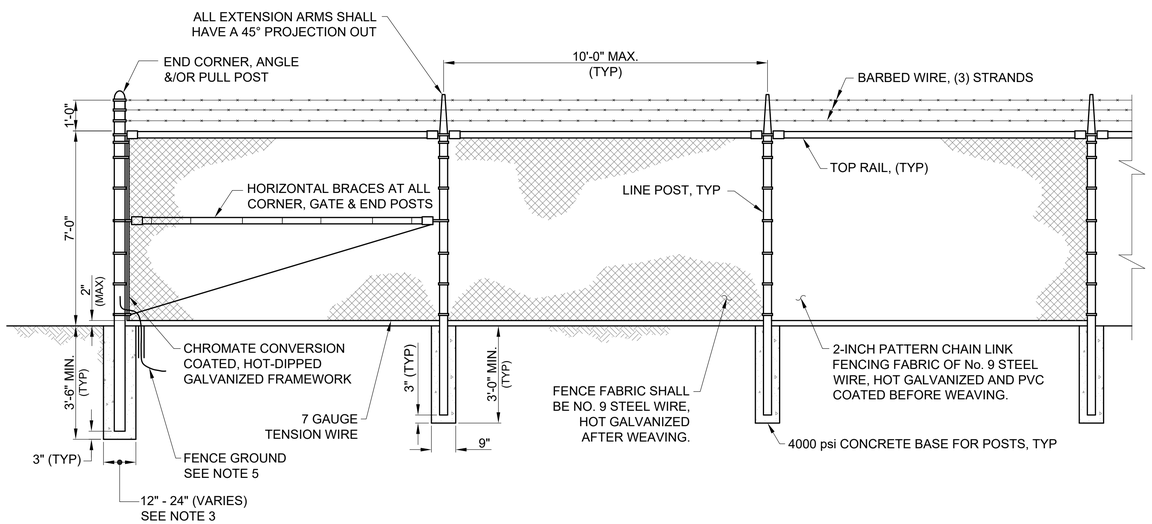
FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\053 C-507.dwg

NOTES:

1. ALL FENCING SHALL BE MANUFACTURED AND INSTALLED PER SPECIFICATIONS



D2 C-508 DOUBLE LEAF GATE DETAIL
SCALE: NONE



D1 C-508 GENERAL SITE FENCING
SCALE: NONE

NO.	DATE	REVISION	APP.

PLOTTED: 8/22/2025 1:52 AM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL

CIVIL STANDARD DETAIL
SITE FENCING AND
ACCESS GATE DETAILS

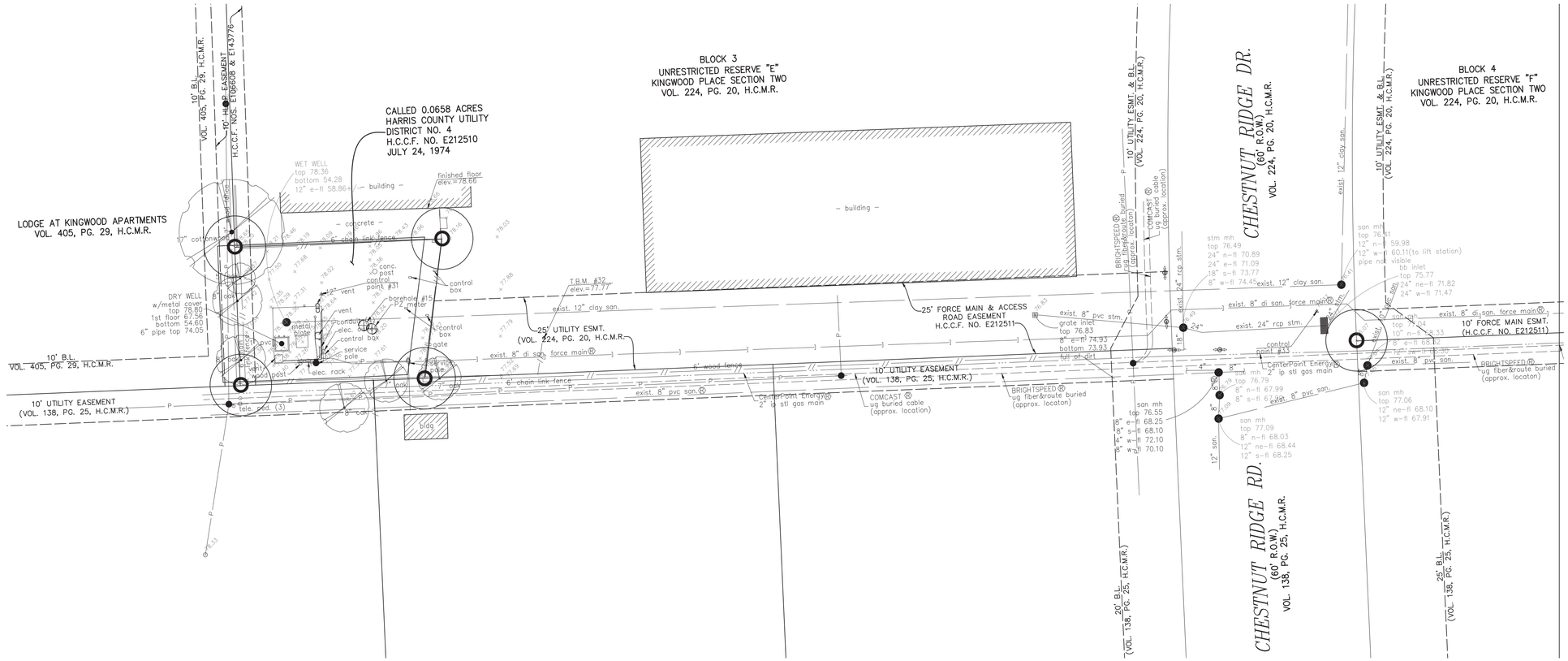
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. C-508
HORIZ: NONE
VERT: NONE
SHEET NO. 54 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Phase II Drawings\5431.10 Drawings\01_Sheets\054 C-508.dwg



Control Point Table				
Point #	Northing	Easting	Elevation	Raw Description
31	13949704.9200	3157771.0140	77.730	SET 1/2" I.R. W/CAP
32	13949690.7100	3157843.4660	77.766	SET "X" CUT ON CONC.
33	13949699.3500	3158094.7650	75.364	SET "X" CUT ON CONC.

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103-38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEYMAP 336C IN THE SAN JACINTO RIVER WATERSHED

ELEV. 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #32:

SET "X" CUT ON CONCRETE DRIVEWAY ON THE EAST SIDE OF CHESTNUT RIDGE LIFT STATION APPROX. 220 FT WEST FROM THE INTERSECTION OF CHESTNUT RIDGE DR
ELEV.= 77.77 FT.

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

EXISTING UNDERGROUND UTILITY INFORMATION (TYPE, SIZE & OWNERSHIP) ARE SHOWN APPROXIMATELY BASED ON THE AVAILABLE RECORD DRAWINGS AND FIELD VERIFICATION (WHERE FEASIBLE) WITHOUT PROBING AND EXCAVATION. NO WARRANTY IS MADE AS TO THE ACCURACY OR COMPLETENESS OF UTILITY LOCATION SHOWN ON THE DRAWING. CAUTION SHOULD BE EXERCISED WHEN EXCAVATING OR BORE AND JACKING IN THE VICINITY OF UNDERGROUND UTILITIES. OWNERS OF THE UTILITIES SHOULD BE NOTIFIED PRIOR TO SUCH ACTIVITIES. CALL UTILITY COORDINATING COMMITTEE AT 713-223-4567, AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THE STREET RIGHT-OF-WAY.

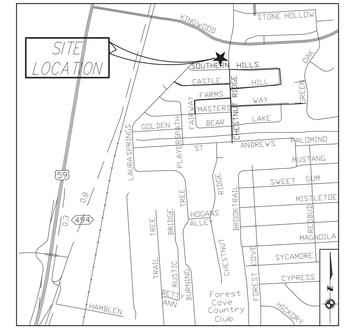
LEGEND:

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- REFERENCE INFORMATION (FROM RECORD DRAWING)
- SBC MANHOLE
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
- STREET LIGHT/PARKING LIGHT
- TREE
- TREE STUMP
- TREE-CREPE MYRTLE
- TREE-PINE
- UTILITY MARK
- WATER METER
- WATER VALVE
- BOREHOLE

- BRUSH ROW
- DITCH/SWALE CENTER LINE
- EASEMENT OR BUILDING LINE
- FENCE
- GAS LINE
- GUARD RAIL
- HEDGE ROW OR TREE LINE
- HIGH BANK
- OVERHEAD POWER LINE WITH OR W/O CABLE
- SANITARY SEWER LINE
- SANITARY FORCE MAIN
- STORM LINE
- TELEPHONE LINE
- UG STREET LIGHT CABLE
- WATER LINE

ABBREVIATIONS:

E./ESMT.	EASEMENT	I.R.	IRON ROD
B.L.	BUILDING LINE	I.P.	IRON PIPE
STM.	STORM	CONC.	CONCRETE
SAN.	SANITARY	LT	LIGHT
SWR.	SEWER	UG	UNDER GROUND
N.F.I.F.	NOT FOUND IN FIELD		



VICINITY MAP KEYMAP: 336 A

N.T.S.

GRAPHIC SCALE

20 0 10 20 40

SCALE: 1" = 20'-0"

NO.	DATE	REVISION	APP.

PLOTTED: 7/10/2025 9:53 AM PEN TABLE: ----

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

KUO & ASSOCIATES
ENGINEERING + SURVEYING
10300 Westoffice Dr., Suite 800, Houston, Texas 77042
Tel: 713-975-8769, Fax: 713-975-0920, www.kuoassociates.com
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STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
07/09/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

CHESTNUT RIDGE LIFT STATION
EXISTING SITE SURVEY
AND CONTROL POINTS TABLE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-101

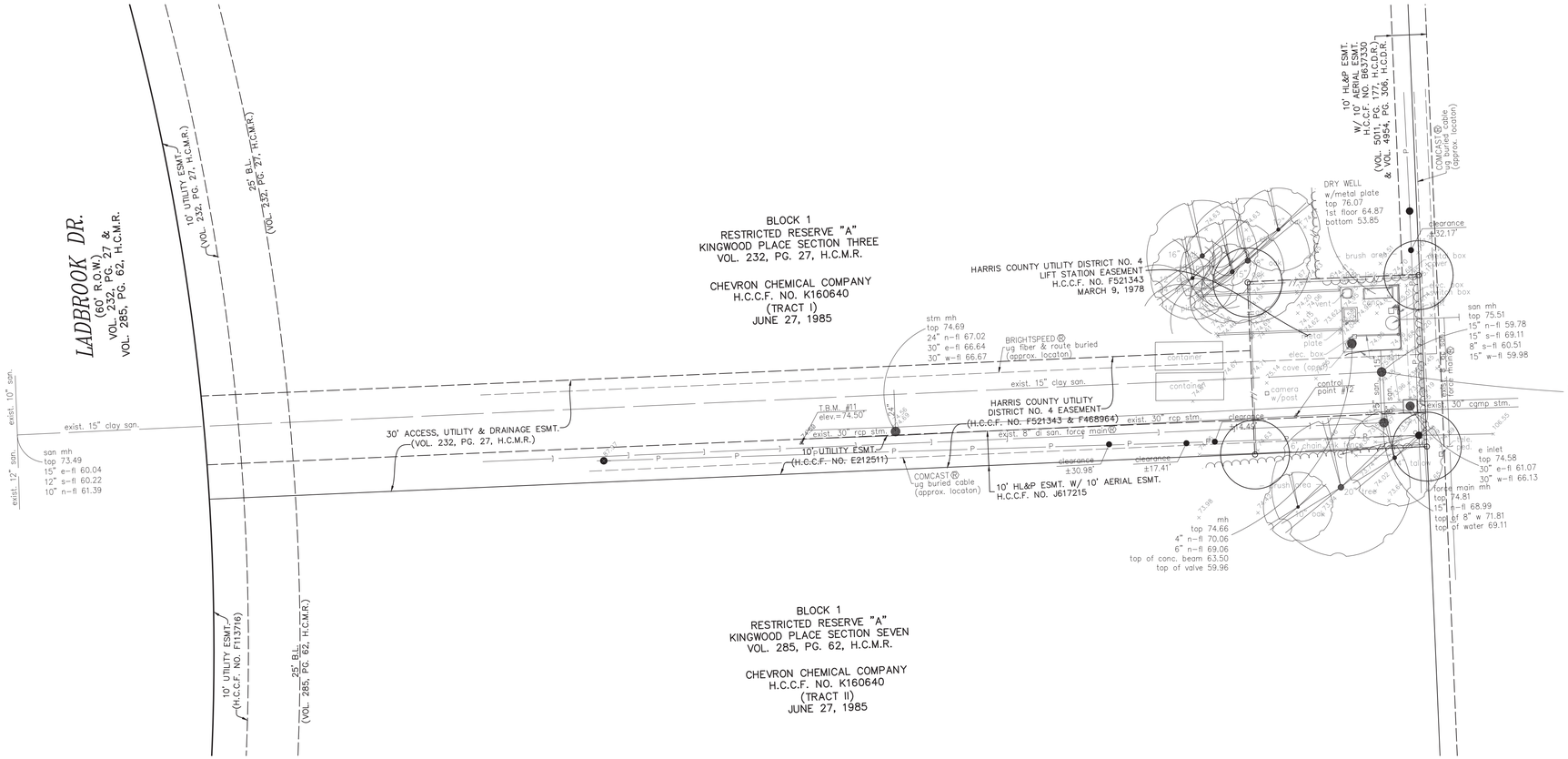
HORIZ: 1"=20'
VERT: N/A

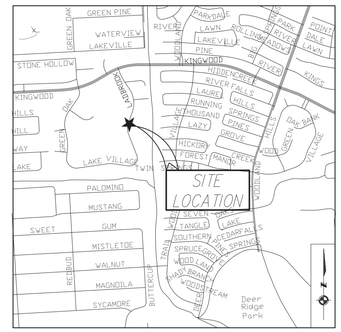
SHEET NO. 55 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-101\SV-101-Chestnut Ridge LS.dwg





VICINITY MAP KEYMAP: 336 B
N.T.S.

GRAPHIC SCALE
20 0 10 20 40
SCALE: 1" = 20'-0"

H.C.F.C.D. UNIT NO.
G 103-38-00-01
CALLED 62.1851 ACRES
HARRIS COUNTY FLOOD
CONTROL DISTRICT
H.C.C.F. NO. H361522
PARCEL "C"
NOV. 23, 1981

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103-38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEYMAP 336C IN THE SAN JACINTO RIVER WATERSHED

ELEV. 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #11:

SET 1/2" I.R. W/CAP LOCATED SOUTH OF THE DRIVEWAY TO THE LIFT STATION APPROXIMATELY 190 FEET EAST FROM LADBROOK DR
ELEV. 74.50 FEET

HORIZONTAL DATUM:

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Control Point Table				
Point #	Northing	Easting	Elevation	Raw Description
11	13949874.8970	3162144.2357	74.497	SET 12" I.R. W/CAP
12	13949882.8584	3162287.7980	74.693	SET 12" I.R. W/CAP

LEGEND:

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
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- WATER VALVE
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STM.	STORM	CONC.	CONCRETE
SAN.	SANITARY	LT	LIGHT
SWR.	SEWER	UG	UNDER GROUND
N.F.I.F.	NOT FOUND IN FIELD		

NO.	DATE	REVISION	APP.

PLOTTED: 7/10/2025 9:55 AM PEN TABLE: ----

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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STATE OF TEXAS
REGISTERED
KUTUBUL A. M. MAINUDDIN
6404
PROFESSIONAL
LAND SURVEYOR
07/09/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

LADBROOK LIFT STATION
EXISTING SITE SURVEY
AND CONTROL POINTS TABLE

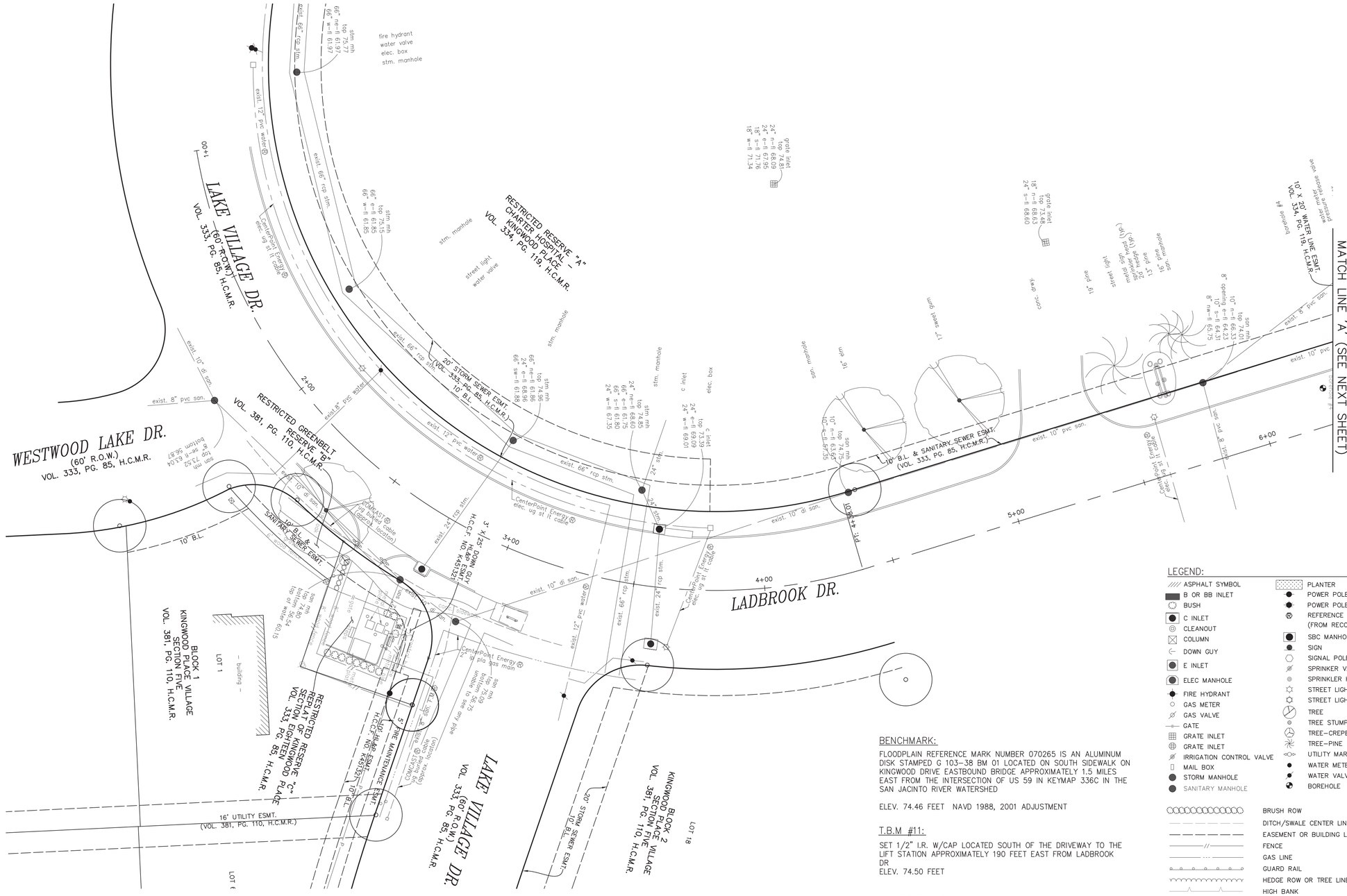
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

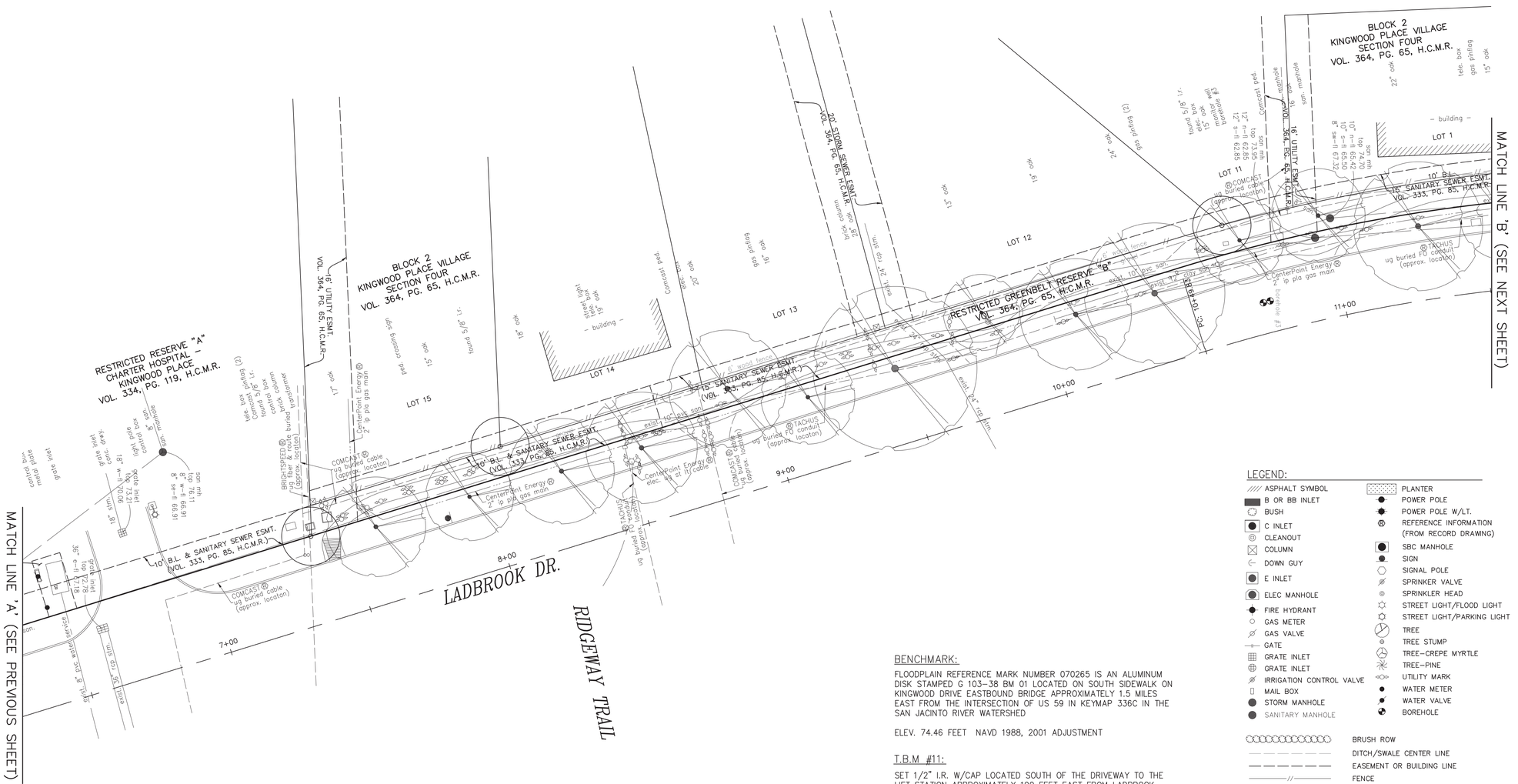
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-201
HORIZ: 1"=20'
VERT: N/A
SHEET NO. 56 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-102\SV-201-Ladbrook LS.dwg


WESTWOOD LAKE DR.
(60' R.O.W.)
VOL. 333, PG. 85, H.C.M.R.
LAKE VILLAGE DR.
(60' R.O.W.)
VOL. 333, PG. 85, H.C.M.R.
LADBROOK DR.
LAKE VILLAGE DR.
(60' R.O.W.)
VOL. 333, PG. 85, H.C.M.R.
RESTRICTED RESERVE "A"
CHARTER HOSPITAL - KINGWOOD PLACE
VOL. 334, PG. 119, H.C.M.R.
RESTRICTED GREENBELT RESERVE "B"
VOL. 381, PG. 110, H.C.M.R.
20' STORM SEWER ESMT.
(VOL. 333, PG. 85, H.C.M.R.)
10' B.L.
10' B.L. & SANITARY SEWER ESMT.
(VOL. 333, PG. 85, H.C.M.R.)
10' B.L. & SANITARY SEWER ESMT.
(VOL. 333, PG. 85, H.C.M.R.)
16' UTILITY ESMT.
(VOL. 381, PG. 110, H.C.M.R.)
5' FIRE MAINTENANCE ESMT.
H.C.C.F. NO. K457321
10' ESMT.
BLOCK 1
KINGWOOD PLACE VILLAGE
SECTION FIVE
VOL. 381, PG. 110, H.C.M.R.
LOT 1
RESTRICTED RESERVE "C"
REPLAT
SECTION OF KINGWOOD PLACE
VOL. 333, PG. 85, H.C.M.R.
BLOCK 2
KINGWOOD PLACE VILLAGE
SECTION FIVE
VOL. 381, PG. 110, H.C.M.R.
LOT 18
LOT 6
building
1+00
2+00
3+00
4+00
5+00
6+00
MATCH LINE 'A' (SEE NEXT SHEET)
fire hydrant
water valve
elec. box
stm. manhole
street light
water valve
grate inlet
C inlet
sanitary manhole
storm manhole
CenterPoint Energy elec. ug st l cable
CenterPoint Energy gas main
COMCAST buried cable (approx. location)
XCEL ENERGY buried cable (approx. location)
exist. 66" rcp stm.
exist. 24" rcp stm.
exist. 12" pvc water
exist. 10" di san.
exist. 8" pvc san.
exist. 10" pvc san.
exist. 8" pvc water
exist. 10" di stm.
exist. 12" pvc water
exist. 10" pvc water
exist. 12" rcp stm.
exist. 24" rcp stm.
exist. 66" rcp stm.
exist. 10" di san.
exist. 10" pvc water
exist. 8" pvc san.
exist. 10" pvc san.
exist. 8" pvc san.
exist. 10" pvc san.
exist. 10" di san.
exist. 10" pvc water
exist. 66" rcp stm.
exist. 24" rcp stm.
exist. 66" rcp stm





VICINITY MAP KEYMAP: 336 B
N.T.S.

GRAPHIC SCALE
20 0 10 20 40
SCALE: 1" = 20'-0"

BENCHMARK:

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ELEV. 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #11:

SET 1/2" I.R. W/CAP LOCATED SOUTH OF THE DRIVEWAY TO THE LIFT STATION APPROXIMATELY 190 FEET EAST FROM LADBROOK DR
ELEV. 74.50 FEET

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- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
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- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- STORM MANHOLE
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SAN.	SANITARY	LT	LIGHT
SWR.	SEWER	UG	UNDER GROUND
N.F.I.F.	NOT FOUND IN FIELD		

NO.	DATE	REVISION	APP.

PLOTTED: 7/10/2025 10:02 AM PEN TABLE: ----

GANNETT FLEMING

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3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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STATE OF TEXAS REGISTERED KUTUBUL A. M. MAINUDDIN 6404 PROFESSIONAL LAND SURVEYOR
07/10/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

LADBROOK DRIVE GRAVITY ROUTE
EXISTING SURVEY
AND CONTROL POINTS TABLE

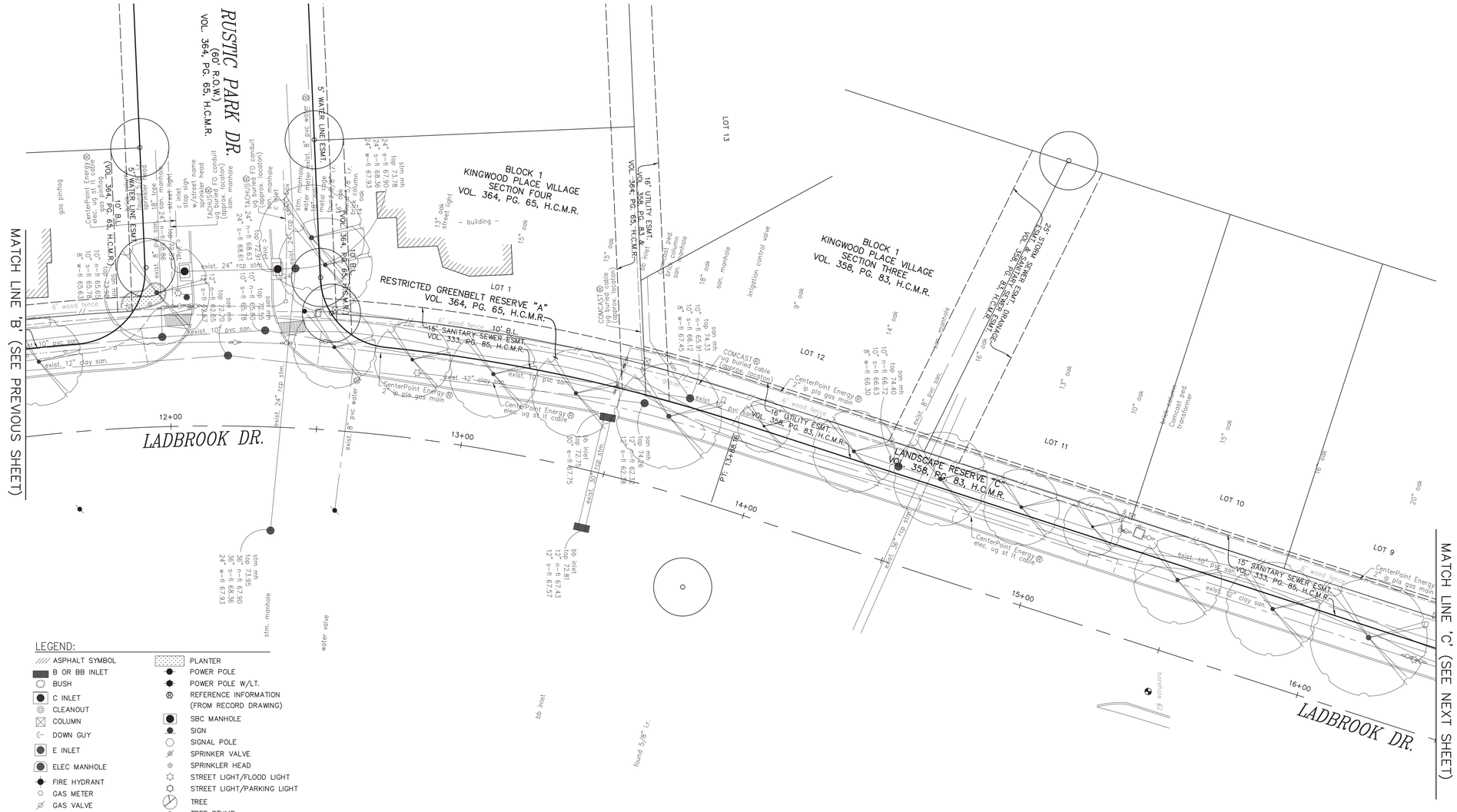
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-203
HORIZ: 1"=20'
VERT: N/A
SHEET NO. 58 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-102 SV-202-Ladbrook Dr.dwg





VICINITY MAP KEYMAP: 336 B
N.T.S.

GRAPHIC SCALE

20 0 10 20 40

SCALE: 1" = 20'-0"

NO.	DATE	REVISION	APP.

PLOTTED: 7/10/2025 10:04 AM PEN TABLE: ----

LEGEND:

ASPHALT SYMBOL	PLANTER
B OR BB INLET	POWER POLE
BUSH	POWER POLE W/LT.
C INLET	REFERENCE INFORMATION (FROM RECORD DRAWING)
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GAS METER	STREET LIGHT/PARKING LIGHT
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ELEV. 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

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STATE OF TEXAS
REGISTERED
KUTUBUL A. W. MAINUDDIN
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PROFESSIONAL
LAND SURVEYOR
07/09/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

LADBROOK DRIVE GRAVITY ROUTE
EXISTING SURVEY
AND CONTROL POINTS TABLE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

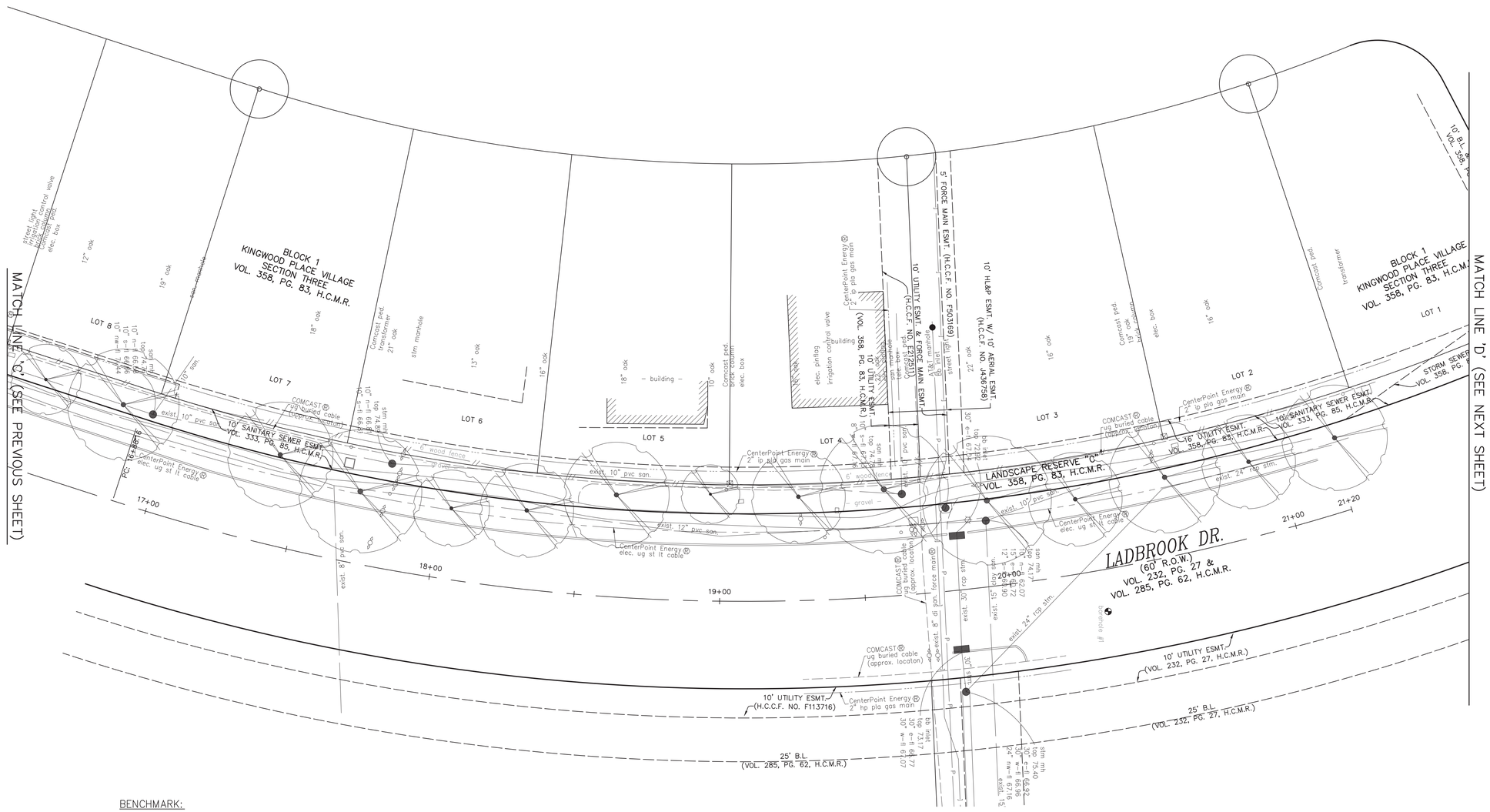
DRAWING NO. SV-204

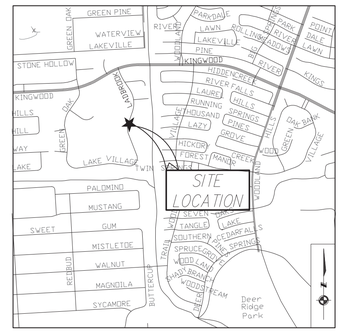
HORIZ: 1"=20'
VERT: N/A

SHEET NO. 59 OF 225

DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-102\SV-202-Ladbrook Dr.dwg





VICINITY MAP KEYMAP: 336 B
N.T.S.

GRAPHIC SCALE
20 0 10 20 40
SCALE: 1" = 20'-0"

BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 070265 IS AN ALUMINUM DISK STAMPED G 103–38 BM 01 LOCATED ON SOUTH SIDEWALK ON KINGWOOD DRIVE EASTBOUND BRIDGE APPROXIMATELY 1.5 MILES EAST FROM THE INTERSECTION OF US 59 IN KEYMAP 336C IN THE SAN JACINTO RIVER WATERSHED

ELEV. 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #11:

SET 1/2" I.R. W/CAP LOCATED SOUTH OF THE DRIVEWAY TO THE LIFT STATION APPROXIMATELY 190 FEET EAST FROM LADBROOK DR
ELEV. 74.50 FEET

HORIZONTAL DATUM:

ALL HORIZONTAL COORDINATES ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, NAD83. THE COORDINATES & DISTANCES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999870017.

EXISTING UTILITY NOTE:

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LEGEND:

- ASPHALT SYMBOL
- B OR BB INLET
- BUSH
- C INLET
- CLEANOUT
- COLUMN
- DOWN GUY
- E INLET
- ELEC MANHOLE
- FIRE HYDRANT
- GAS METER
- GAS VALVE
- GATE
- GRATE INLET
- GRATE INLET
- IRRIGATION CONTROL VALVE
- MAIL BOX
- STORM MANHOLE
- SANITARY MANHOLE
- PLANTER
- POWER POLE
- POWER POLE W/LT.
- REFERENCE INFORMATION (FROM RECORD DRAWING)
- SBC MANHOLE
- SIGN
- SIGNAL POLE
- SPRINKER VALVE
- SPRINKLER HEAD
- STREET LIGHT/FLOOD LIGHT
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- UTILITY MARK
- WATER METER
- WATER VALVE
- BOREHOLE
- BRUSH ROW
- DITCH/SWALE CENTER LINE
- EASEMENT OR BUILDING LINE
- FENCE
- GAS LINE
- GUARD RAIL
- HEDGE ROW OR TREE LINE
- HIGH BANK
- OVERHEAD POWER LINE WITH OR W/O CABLE
- SANITARY SEWER LINE
- SANITARY FORCE MAIN
- STORM LINE
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- UG STREET LIGHT CABLE
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ABBREVIATIONS:

E./ESMT.	EASEMENT	I.R.	IRON ROD
B.L.	BUILDING LINE	I.P.	IRON PIPE
STM.	STORM	CONC.	CONCRETE
SAN.	SANITARY	LT	LIGHT
SWR.	SEWER	UG	UNDER GROUND
N.F.I.F.	NOT FOUND IN FIELD		

NO.	DATE	REVISION	APP.

PLOTTED: 7/10/2025 10:07 AM PEN TABLE: ----

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

KUO & ASSOCIATES
ENGINEERING + SURVEYING
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Tel: 713-975-6769, Fax: 713-975-9920, www.kuoassociates.com
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TBPELS Surveying Firm Reg. No. 10075600

STATE OF TEXAS
REGISTERED
PROFESSIONAL
KUTUBUL A. W. MAINUDDIN
6404
LAND SURVEYOR
07/10/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

LADBROOK DRIVE GRAVITY ROUTE
EXISTING SURVEY
AND CONTROL POINTS TABLE

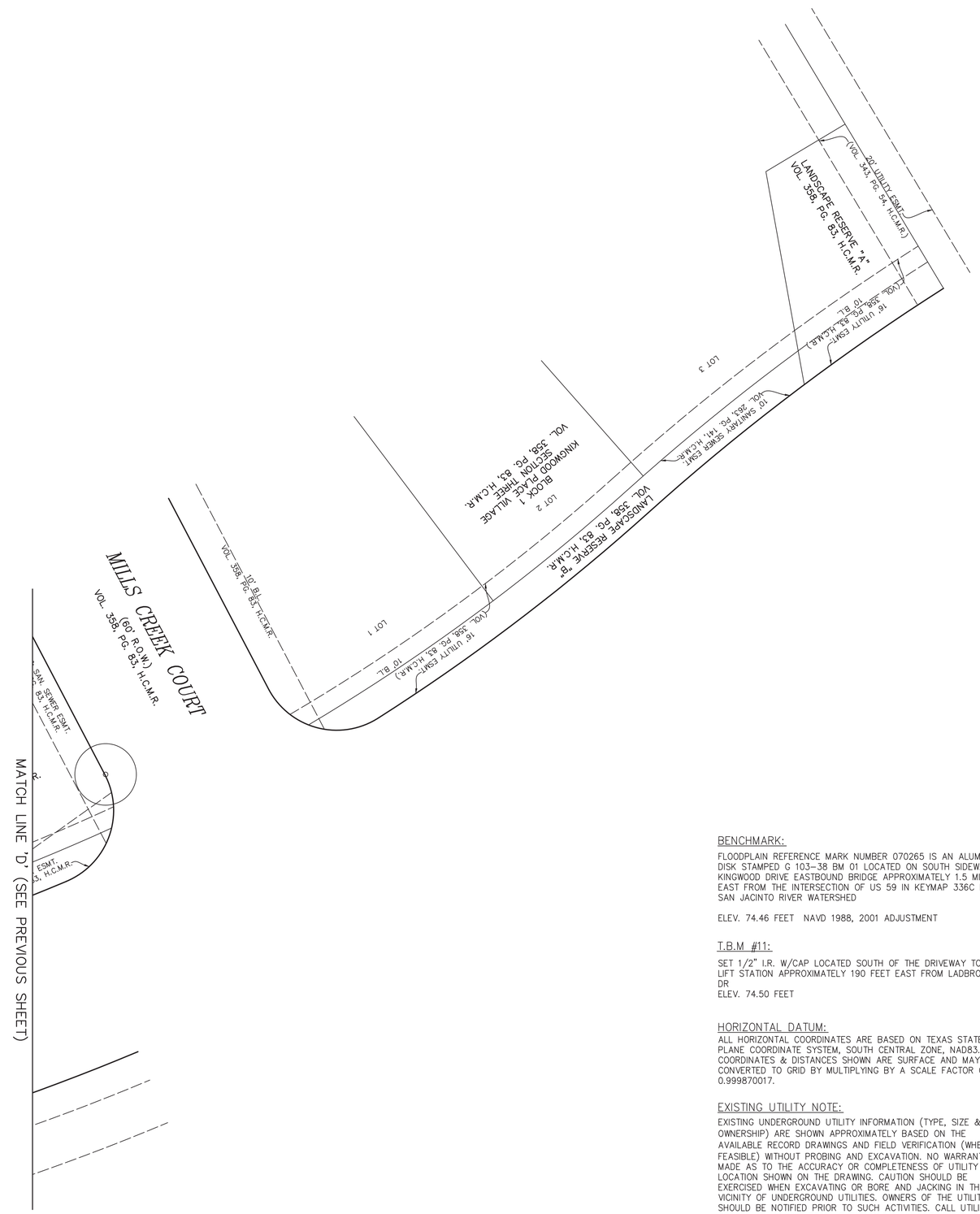
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SV-205
HORIZ: 1"=20'
VERT: N/A
SHEET NO. 60 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-102\SV-202-Ladbrook Dr.dwg





VICINITY MAP KEYMAP: 336 B
N.T.S.

GRAPHIC SCALE

20 0 10 20 40

SCALE: 1" = 20'-0"

NO.	DATE	REVISION	APP.

PLOTTED: 7/10/2025 10:10 AM PEN TABLE: ----

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ELEV. 74.46 FEET NAVD 1988, 2001 ADJUSTMENT

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SET 1/2" I.R. W/CAP LOCATED SOUTH OF THE DRIVEWAY TO THE LIFT STATION APPROXIMATELY 190 FEET EAST FROM LADBROOK DR
ELEV. 74.50 FEET

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07/09/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

LADBROOK DRIVE GRAVITY ROUTE
EXISTING SURVEY
AND CONTROL POINTS TABLE

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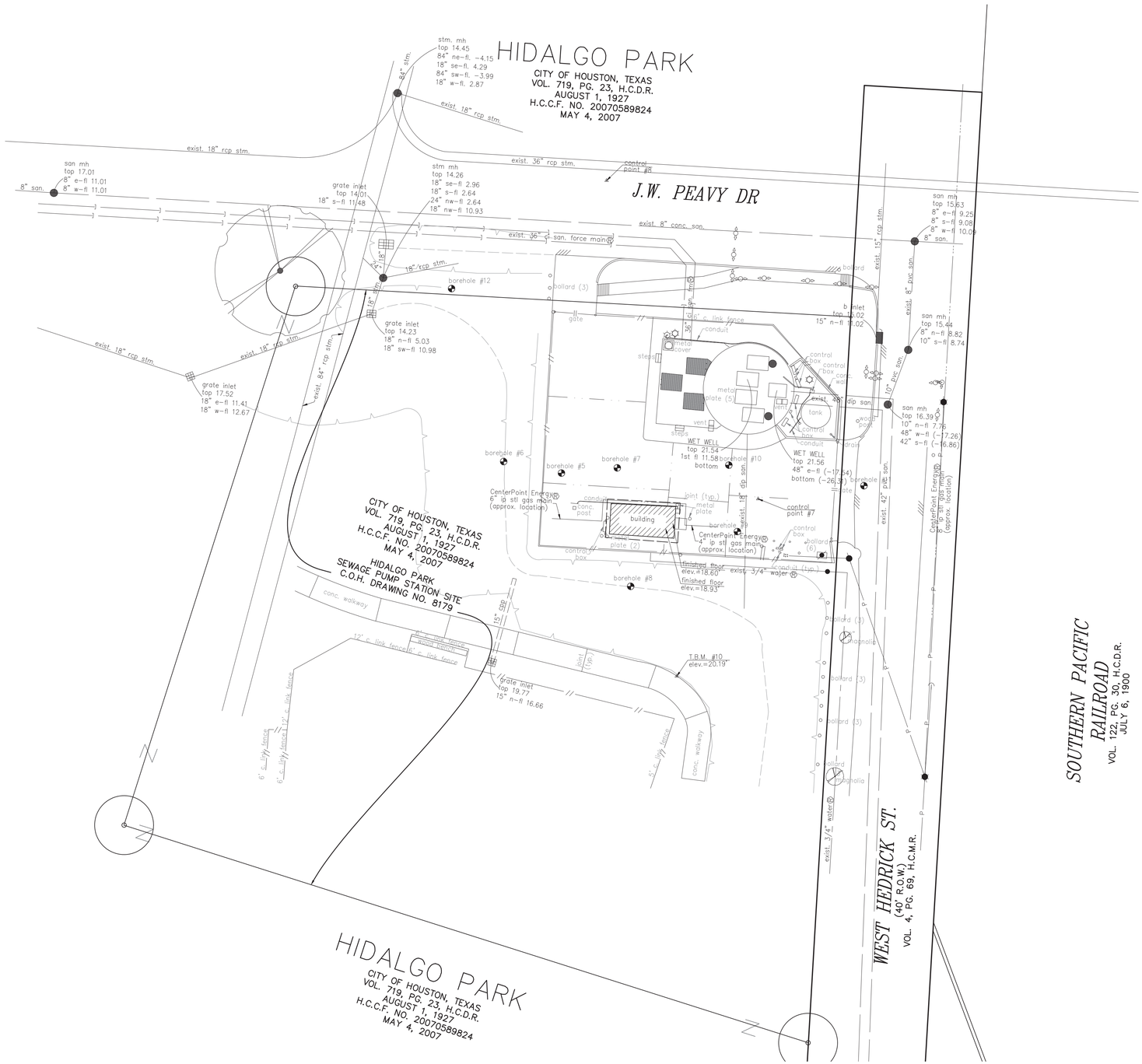
DRAWING NO. SV-206

HORIZ: 1"=20'
VERT: N/A

SHEET NO. 61 OF 225

DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-102\SV-202-Ladbrook Dr.dwg



BENCHMARK:

FLOODPLAIN REFERENCE MARK NUMBER 210005 IS A BRASS DISK STAMPED 210005 LOCATED ON EAST SIDEWALK ON S SGT MACARIO GARCIA DRIVE BRIDGE APPROXIMATELY 0.05 MILE NORTH FROM THE INTERSECTION OF AVENUE W IN KEYMAP 495N IN THE BUFFALO BAYOU WATERSHED

ELEV. 34.38 FEET NAVD 1988, 2001 ADJUSTMENT

T.B.M #10:

SET 'X' CUT ON CONCRETE TRAIL AT THE NORTHEAST CORNER OF THE YOUTH SOFTBALL FIELD
ELEV. 20.19 FEET

HORIZONTAL DATUM:

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N.F.I.F.	NOT FOUND IN FIELD		

Control Point Table				
Point #	Northing	Easting	Elevation	Raw Description
7	13839280.7840	3144660.3277	17.949	SET "X" CUT ON CONC.
8	13839388.8160	3144608.9009	15.017	SET MAG NAIL W/SHINER
10	13839220.5974	3144632.7091	20.187	SET "X" CUT ON CONC.



VICINITY MAP KEYMAP: 495 S
N.T.S.

GRAPHIC SCALE
20 0 10 20 40
SCALE: 1" = 20'-0"

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07/09/25

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

SURVEY

MAGNOLIA PARK LIFT STATION
EXISTING SITE SURVEY
AND CONTROL POINTS TABLE

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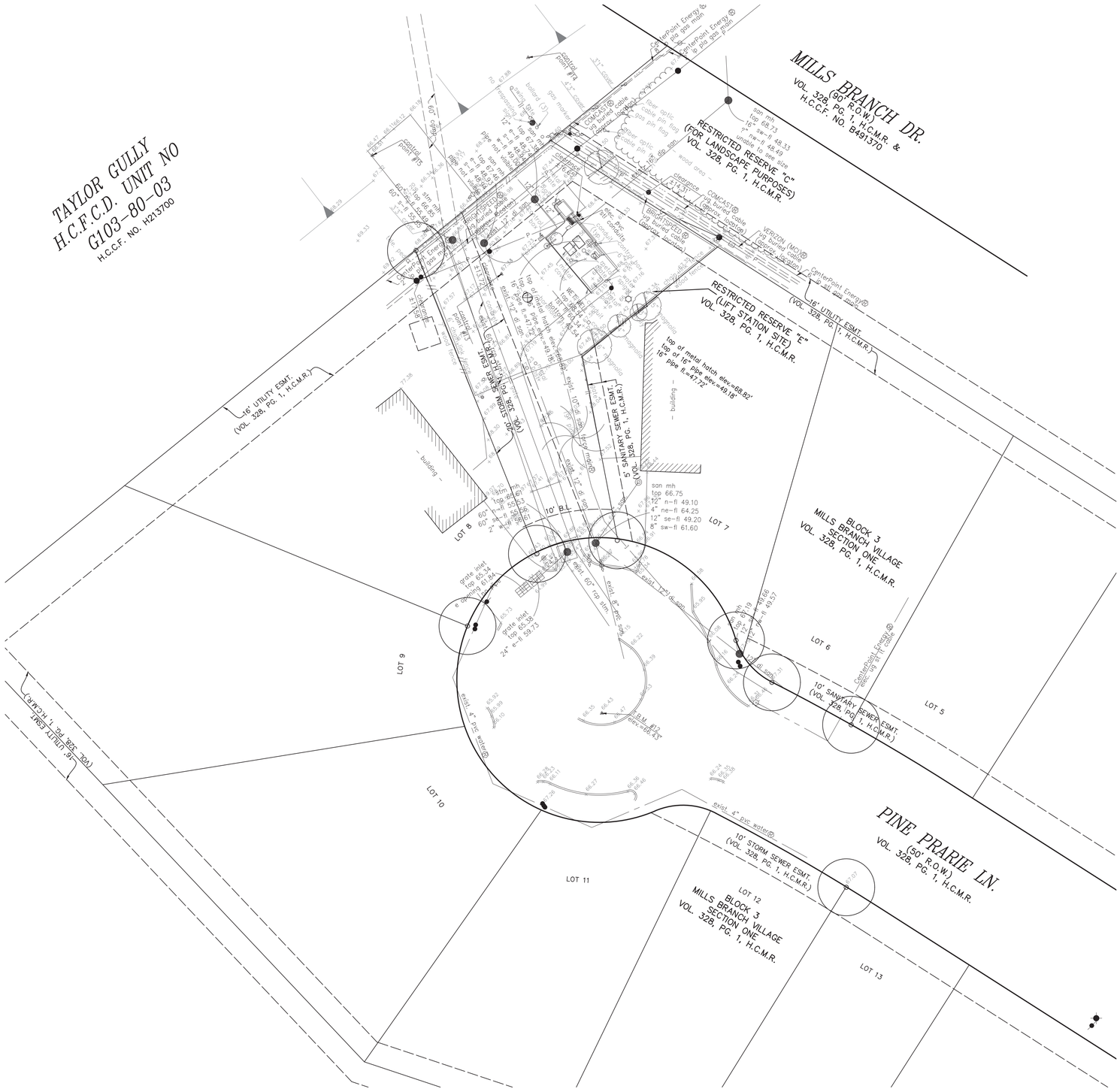
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
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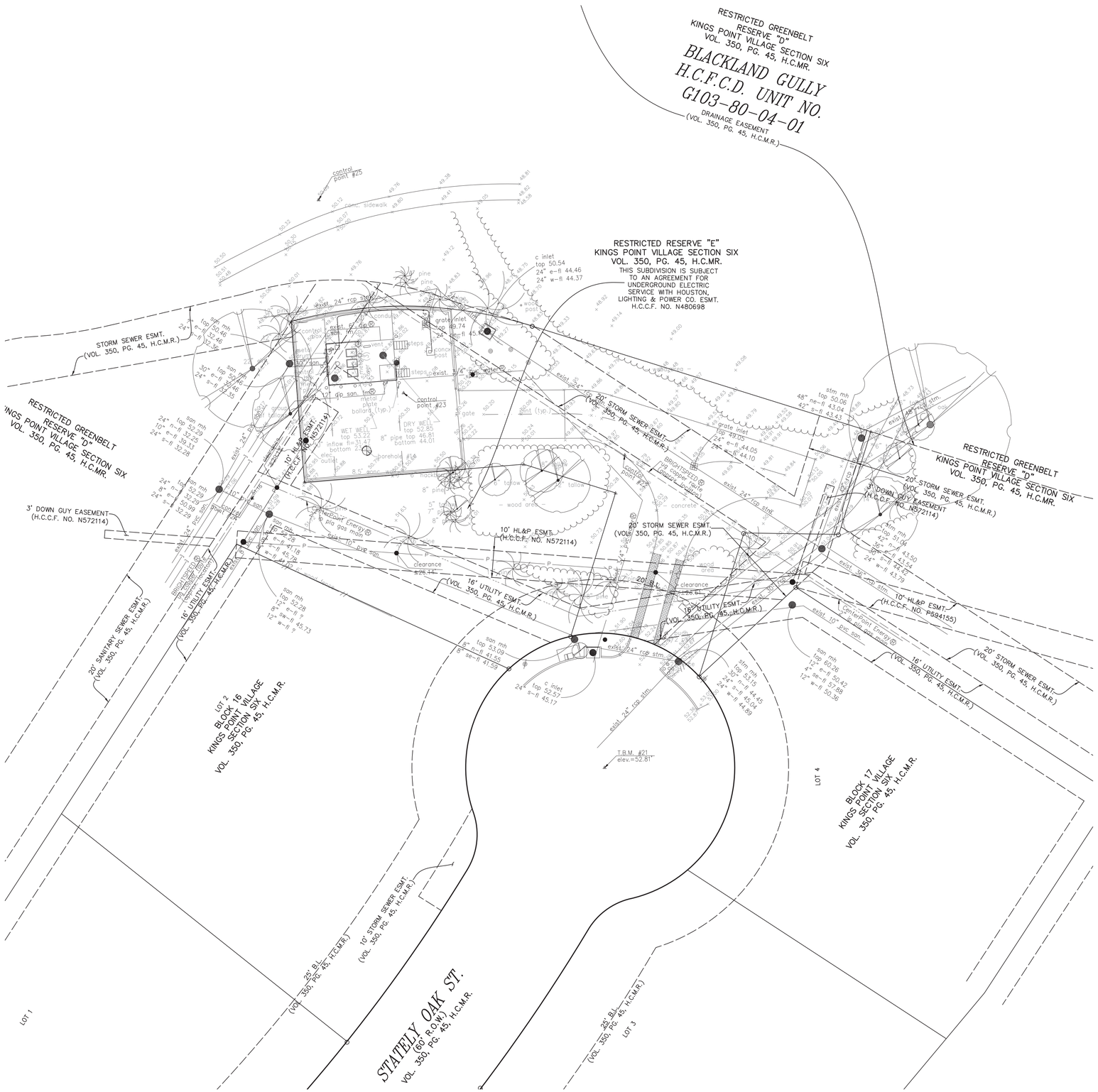
DRAWING NO. SV-301
HORIZ: 1"=20'
VERT: N/A
SHEET NO. 62 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PLOTTED: 7/10/2025 10:15 AM PEN TABLE: ----

FILE PATH: S:\Proj-2024\24033 (COH LIFT STATIONS)\Dwgs\Topo Survey Sheets\SV-301\SV-301-Magnolia Park LS.dwg


TAYLOR GULLY
H.C.F.C.D. UNIT NO
G103-80-03
H.C.C.F. NO. H213700
MILLS BRANCH DR.
(90' R.O.W.)
VOL. 328, PG. 1, H.C.M.R. &
H.C.C.F. NO. B491370
RESTRICTED RESERVE "C"
(FOR LANDSCAPE PURPOSES)
VOL. 328, PG. 1, H.C.M.R.
RESTRICTED RESERVE "E"
(LIFT STATION SITE)
VOL. 328, PG. 1, H.C.M.R.
16' UTILITY ESMT.
(VOL. 328, PG. 1, H.C.M.R.)
5' SANITARY SEWER ESMT.
(VOL. 328, PG. 1, H.C.M.R.)
10' B.L.
BLOCK 3
MILLS BRANCH VILLAGE
SECTION ONE
VOL. 328, PG. 1, H.C.M.R.
LOT 7
LOT 6
LOT 5
LOT 9
LOT 10
LOT 11
LOT 12
LOT 13
10' SANITARY SEWER ESMT.
(VOL. 328, PG. 1, H.C.M.R.)
10' STORM SEWER ESMT.
(VOL. 328, PG. 1, H.C.M.R.)
PINE PRARIE LN.
(50' R.O.W.)
VOL. 328, PG. 1, H.C.M.R.
top of metal notch elev.=88.82'
top of 16" pipe elev.=49.18'
top of 16" pipe ft.=47.72'
B.M. #12
elev.=66.43'
existing 4" pvc water
existing 6" pvc water
existing 8" pvc water
existing 12" pvc water
existing 60" rcp storm
existing 8" pvc sanitary sewer
existing 12" dip sanitary sewer
existing 24" rcp storm
existing 48" rcp storm
existing 60" rcp storm
existing 72" rcp storm
existing 96" rcp storm
existing 120" rcp storm
existing 126" rcp storm
existing 132" rcp storm
existing 144" rcp storm
existing 156" rcp storm
existing 168" rcp storm
existing 180" rcp storm
existing 192" rcp storm
existing 204" rcp storm
existing 216" rcp storm
existing 228" rcp storm
existing 240" rcp storm
existing


RESTRICTED GREENBELT
RESERVE "D"
KINGS POINT VILLAGE SECTION SIX
VOL. 350, PG. 45, H.C.MR.
BLACKLAND GULLY
H.C.F.C.D. UNIT NO.
G103-80-04-01
DRAINAGE EASEMENT
(VOL. 350, PG. 45, H.C.M.R.)
RESTRICTED RESERVE "E"
KINGS POINT VILLAGE SECTION SIX
VOL. 350, PG. 45, H.C.MR.
THIS SUBDIVISION IS SUBJECT TO AN AGREEMENT FOR UNDERGROUND ELECTRIC SERVICE WITH HOUSTON, LIGHTING & POWER CO. ESMT. H.C.C.F. NO. N480698
STORM SEWER ESMT. (VOL. 350, PG. 45, H.C.M.R.)
RESTRICTED GREENBELT RESERVE "D" KINGS POINT VILLAGE SECTION SIX VOL. 350, PG. 45, H.C.MR.
RESTRICTED GREENBELT RESERVE "D" KINGS POINT VILLAGE SECTION SIX VOL. 350, PG. 45, H.C.MR.
3' DOWN GUY EASEMENT (H.C.C.F. NO. N572114)
10' HL&P ESMT. (H.C.C.F. NO. N572114)
20' STORM SEWER ESMT. (VOL. 350, PG. 45, H.C.M.R.)
16' UTILITY ESMT. (VOL. 350, PG. 45, H.C.M.R.)
20' SANITARY SEWER ESMT. (VOL. 350, PG. 45, H.C.M.R.)
LOT 2 BLOCK 16 KINGS POINT VILLAGE SECTION SIX VOL. 350, PG. 45, H.C.M.R.
LOT 4 BLOCK 17 KINGS POINT VILLAGE SECTION SIX VOL. 350, PG. 45, H.C.M.R.
LOT 1
LOT 3
STATELY OAK ST. (60' R.O.W.) VOL. 350, PG. 45, H.C.M.R.
25' B.L. (VOL. 350, PG. 45, H.C.M.R.)
10' STORM SEWER ESMT. (VOL. 350, PG. 45, H.C.M.R.)
T.B.M. #21 elev.=52.81
control point #25
control point #23
control point #24
BRIGHTSPEED fiber optic buried cable
CenterPoint Energy gas main
CenterPoint Energy overhead pwr
WET WELL top 53.22 inflow fl=31.22 bottom 23.22
DRY WELL top 52.85 pipe top 46.81 bottom 44.01
8" pipe top 46.91
8" pipe top 46.81
8" pipe top 46.85
8" pipe top 46.88
8" pipe top 46.58
8" pipe top 46.38
8" pipe top 46.41
8" pipe top 46.25
8" pipe top 46.28
8" pipe top 46.18
8" pipe top 46.08
8" pipe top 46.12
8" pipe top 46.02
8" pipe top 45.92
8" pipe top 45.96
8" pipe top 45.86
8" pipe top 45.90
8" pipe top 45.80
8" pipe top 45.84
8" pipe top 45.74
8" pipe top 45.78
8" pipe top 45.68
8" pipe top

GENERAL NOTES FOR STRUCTURES

CONCRETE

1. DESIGN SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI–318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI–350).

2. ALL REINFORCING BARS SHALL CONFORM TO ASTM A–615, GRADE 60, ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.

3. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.

4. HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7Ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7Ld, UNLESS NOTED OTHERWISE.

5. WALL OR COLUMNS SHALL HAVE DOWELS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL. SEE FOOTING SCHEDULE.

6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:

STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS	4000 PSI
SLABS–ON–GRADE	4000 PSI
LEAN CONCRETE CLASS B	1500 PSI
GROUT FILL CLASS H	3000 PSI

7. UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

SLABS

TOP AND BOTTOM OF FORMED SLABS	2"
TOP OF WALK AND DRIVEWAY SLABS	2"
SURFACES IN CONTACT WITH LIQUID	2"
BOTTOM OF SLABS ON FILL OR SOIL	3"

FOOTINGS

TOP AND SIDES	2 1/2"
BOTTOM	3"

8. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.

9. ANY STOP IN FRAMED CONCRETE WORK MUST BE IN THE CENTER OF THE SPAN AND INCORPORATE AN APPROVED KEYWAY, REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.

10. USE TYPE 'C2' JOINT FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE AND WALLS WHICH SEPARATE AREAS OF SOIL OR LIQUID FROM PERMANENTLY DRY AREAS SUCH AS TUNNELS, GALLERIES, BASEMENT ROOMS, ETC. USE TYPE 'C1' JOINT AT ALL OTHER CONSTRUCTION JOINTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

11. CONCRETE WALLS AND PARTITIONS SHALL BE POURED IN MAXIMUM LENGTHS OF 40 FEET BETWEEN VERTICAL CONSTRUCTION JOINTS.

12. ALL CONCRETE SLABS OVER 8" IN THICKNESS, REINFORCED WITH BARS, AND POURED AGAINST SOIL SHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.

13. ALL EXPOSED EDGES OF SLABS SHALL BE CHAMFERED 3/4" UNLESS OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.

14. REFER TO ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION.

FOUNDATIONS

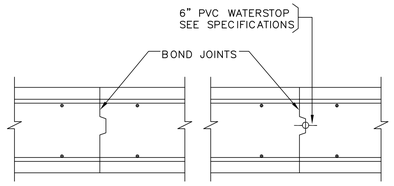
1. ALLOWABLE SOILD BEARING PRESSURE, EXCAVATION AND BACKFILL FOR FOUNDATIONS AND STRUCTURES SHALL BE AS RECOMMENDED IN THE GEOTECHNICAL REPORT.

2. ALL EXCAVATIONS SHALL BE CARRIED OUT IN THE DRY, AND PROVISIONS SHALL BE MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING AT ALL TIMES.

3. ALL FOUNDATIONS SHALL BE CONSTRUCTED IN EXCAVATIONS FREE OF STANDING WATER.

4. BACKFILL MATERIAL, PLACING AND COMPACTION OF BACKFILL SHALL BE IN ACCORDANCE WITH THE DRAWINGS, AND THE CONTRACT SPECIFICATIONS.

LD=TENSILE DEVELOPMENT LENGTH FOR REINF BARS WITH FY = 60 KSI	
BAR SIZE	TENSION DEVELOPMENT LENGTH 'LD' INCHES
3	12
4	12
5	15
6	19
7	26
8	35
9	44
10	56
11	68



TYPE C1 TYPE C2

NOTES:
1. IN JOINTS W/ MORE THAN ONE KEY, PLACE WATERSTOP IN KEY NEAREST TO SURFACE AGAINST EARTH OR WATER
2. REINFORCING STEEL IS CONTINUOUS THROUGH CONSTRUCTION JOINT

CONSTRUCTION JOINTS

ABBREVIATIONS

ADDL	ADDITIONAL	IF	INSIDE FACE
ALT	ALTERNATE	INT	INTERIOR
&	AND	LP	LOW POINT
ARCH	ARCHITECTURAL	MH	MANHOLE
@	AT	MAX	MISCELLANEOUS
BM	BEAM	MIN	MINIMUM
BOT	BOTTOM	#	NUMBER
B/	BOTTOM OF	OC	ON CENTER
BLDG	BUILDING	OPNG	OPENING
C	CENTERLINE	OA	OVERALL
C/C	CENTER TO CENTER	PVC	POLYVINYL CHLORIDE
CLR	CLEAR(ANCE)	R	RADIUS
COL	COLUMN	REINF	REINFORCEMENT
CONC	CONCRETE	REQD	REQUIRED
CONST	CONSTRUCTION	SCHED	SCHEDULE
CONT	CONTINUOUS	SECT	SECTION
DET	DETAIL	SPEC	SPECIFICATIONS
DIA	DIAMETER	SS	STAINLESS STEEL
Ø	DIAMETER	STD	STANDARD
DWG	DRAWING	STIRR	STIRRUP
DWL	DOWEL	SYMM	SYMMETRICAL
EF	EACH FACE	T	TOP
EW	EACH WAY	T/	TOP OF
EL	ELEVATION	TYP	TYPICAL
EXP	EXPANSION	UON	UNLESS OTHERWISE NOTED
EXT	EXTERIOR	VAR	VARIES
FTG	FOOTING	VERT	VERTICAL
HP	HIGH POINT	WWF	WELDED WIRE FABRIC
HORIZ	HORIZONTAL	W/	WITH

NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

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T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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THEODORE RICHARD KRULL
Engineer
143561
Registration Number
AUGUST 21, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

CHESTNUT RIDGE
GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-101

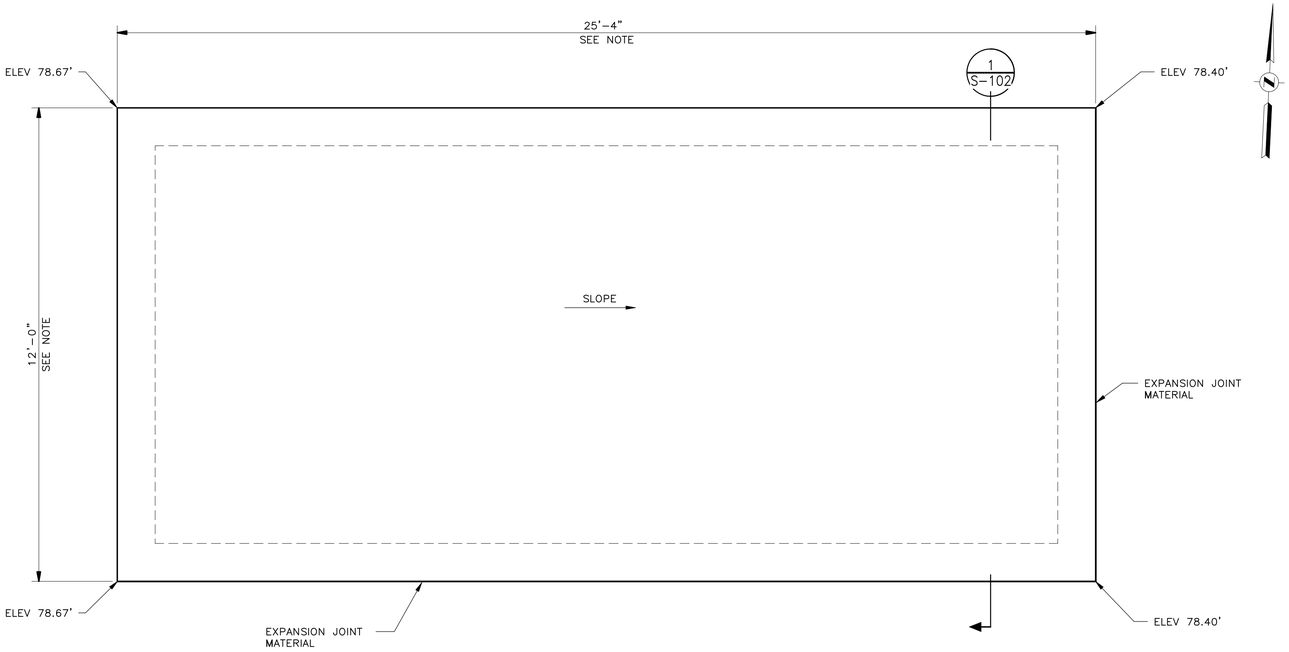
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VERT: 12" = 1'–0"

SHEET NO. 65 OF 225

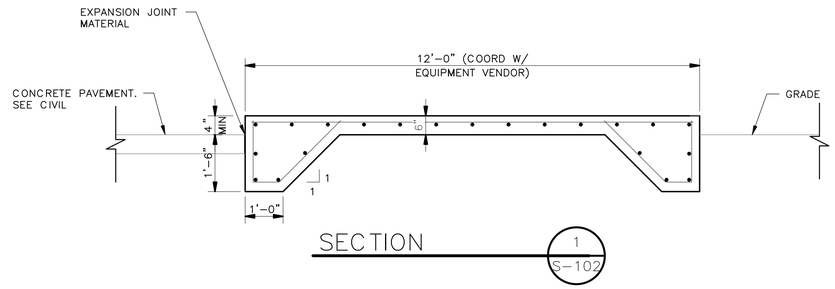
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_CHR_central_R23.rvt



NOTE:
1. COORDINATE SLAB DIMENSIONS AND LOCATION WITH EQUIPMENT AND CIVIL PLANS.



SECTION 1/S-102

NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

GENERATOR AND ELECTRICAL EQUIPMENT PAD PLAN

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

CHESTNUT RIDGE

EQUIPMENT PAD PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-102

HORIZ: 1/2" = 1'-0"
VERT: 1/2" = 1'-0"

SHEET NO. 66 OF 225

DRAWING SCALE

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FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_CHR_central_R23.rvt

GENERAL NOTES FOR STRUCTURES

CONCRETE

1. DESIGN SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI–318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI–350).

2. ALL REINFORCING BARS SHALL CONFORM TO ASTM A–615, GRADE 60, ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.

3. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.

4. HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7Ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7Ld, UNLESS NOTED OTHERWISE.

5. WALL OR COLUMNS SHALL HAVE DOWELS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL. SEE FOOTING SCHEDULE.

6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:

STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS	4000 PSI
SLABS–ON–GRADE	4000 PSI
LEAN CONCRETE CLASS B	1500 PSI
GROUT FILL CLASS H	3000 PSI

7. UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

SLABS	
TOP AND BOTTOM OF FORMED SLABS	2"
TOP OF WALK AND DRIVEWAY SLABS	2"
SURFACES IN CONTACT WITH LIQUID	2"
BOTTOM OF SLABS ON FILL OR SOIL	3"
FOOTINGS	
TOP AND SIDES	2 1/2"
BOTTOM	3"
WALLS	
LESS THAN 12" THICK	1 1/2"
12" OR OVER IN THICKNESS WITH POURS LESS THAN 10 FEET HIGH	2"
12" OR OVER IN THICKNESS WITH POURS MORE THAN 10 FEET HIGH	2 1/2"
BEAMS AND GIRDERS	
COVER AT TOP, BOTTOM AND SIDES OF LONGITUDINAL REINF	2"
COLUMNS	
COVER FOR VERTICAL BARS	2"

8. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.

9. ANY STOP IN FRAMED CONCRETE WORK MUST BE IN THE CENTER OF THE SPAN AND INCORPORATE AN APPORVED KEYWAY, REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.

10. USE TYPE 'C2' JOINT FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE AND WALLS WHICH SEPARATE AREAS OF SOIL OR LIQUID FROM PERMANENTLY DRY AREAS SUCH AS TUNNELS, GALLERIES, BASEMENT ROOMS, ETC. USE TYPE 'C1' JOINT AT ALL OTHER CONSTRUCTION JOINTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

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12. ALL CONCRETE SLABS OVER 8" IN THICKNESS, REINFORCED WITH BARS, AND POURED AGAINST SOIL SHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.

13. ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4" UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.

14. REFERE TO ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS". ALL STRUCTURAL STEEL SHALL BE ASTM A36.

2. ELEVATIONS OF STEEL BEAMS SHOWN ON FRAMING PLANS REFER TO TOP OF FLANGE, UNLESS OTHERWISE NOTED.

3. ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER ASTM A–325 BOLTS EXCEPT AS OTHERWISE SHOWN OR NOTED. ALL CONNECTIONS SHALL BE CAPABLE OF SUPPORTING ON HALF THE MAXIMUM ALLOWABLE UNIFORM LOAD FOR INDICATED BEAM SIZE AND SPAN IN AISC MANUAL OF STEEL CONSTRUCTION, EXCEPT AS OTHERWISE NOTED.

4. FIELD CONNECTIONS SHALL BE BOLTED, EXCEPT AS OTHERWISE SHOWN OR NOTED.

5. ALL WELDING SHALL CONFORM TO THE LATEST SPECIFICATION OF THE AMERICAN WELDING SOCIETY. ALL WELDED CONNECTIONS SHALL BE MADE WITH AWS A5.1 OR A5.5 E70 XX ELECTRODE.

6. ANCHOR BOLTS AND MISC EMBEDDED STEEL ---------- ASTM A36
   ANCHOR BOLTS WHICH ARE SUBMERGED, LOCATED ABOVE A LIQUID SURFACE, OR ARE IN A CORROSIVE ATMOSPHERE ---------- 316 SS

7. ALL EQUIPMENT ANCHOR BOLT DIMENSIONS AND LOCATIONS SHALL BE VERIFIED FROM CERTIFIED VENDOR DRAWINGS, PRIOR TO CONSTRUCTION.

FOUNDATIONS

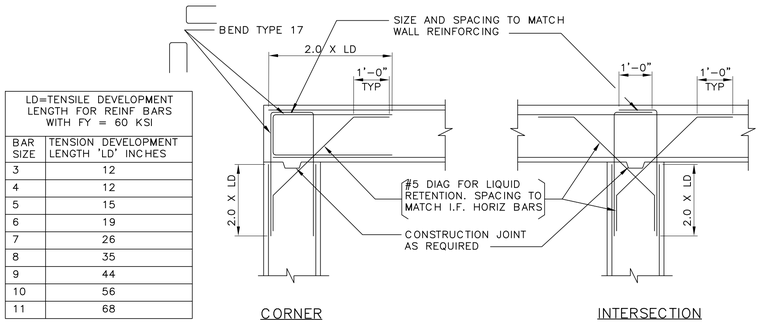
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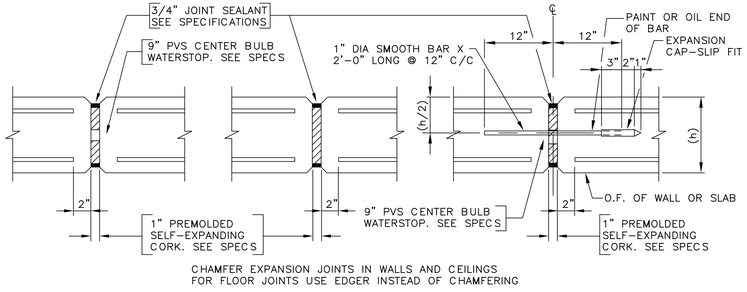
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LD=TENSILE DEVELOPMENT LENGTH FOR REINF BARS WITH FY = 60 KSI	
BAR SIZE	TENSION DEVELOPMENT LENGTH 'LD' INCHES
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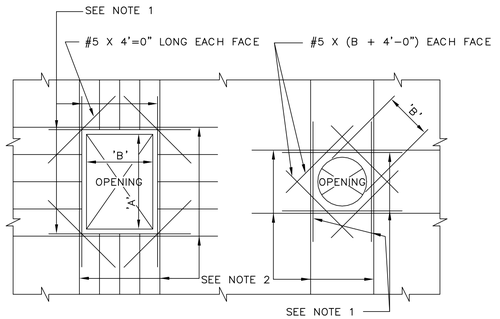
CORNER INTERSECTION

TYPICAL DETAILS OF WALL REINFORCEMENT



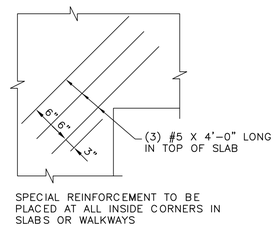
TYPE E1 TYPE E2 TYPE E3

EXPANSION JOINTS



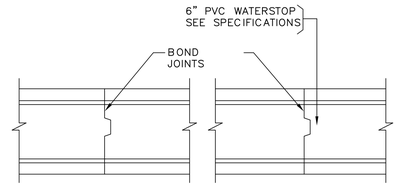
ADDITIONAL REINFORCING STEEL AT OPENINGS IN WALLS AND SLABS

NOTES:
1. PROVIDE (2) #6 X (B + 4'–0") ADDITIONAL REBARS AT TOP AND BOTTOM AND (2) #6 X (A + 4'–0") ADDITIONAL REBARS AT EACH SIDE OF OPENING IN WALLS ONLY.
2. PROVIDE ADDITIONAL BARS EQUAL TO ONE HALF OF BARS INTERRUPTED AT EACH SIDE OF OPENING AT 3" CENTER TO CENTER. THESE BARS SHALL BE ORIGINAL SIZES AND LENGTHS AS THOSE OF THE INTERRUPTED BARS. (TYPICAL FOR OPENINGS IN SLABS AND PRESSURE WALLS).



SPECIAL REINFORCEMENT TO BE PLACED AT ALL INSIDE CORNERS IN SLABS OR WALKWAYS

SLAB DETAIL AT RE–ENTRANT CORNER



TYPE C1 TYPE C2

NOTES:
1. IN JOINTS W/ MORE THAN ONE KEY, PLACE WATERSTOP IN KEY NEAREST TO SURFACE AGAINST EARTH OR WATER
2. REINFORCING STEEL IS CONTINUOUS THROUGH CONSTRUCTION JOINT

CONSTRUCTION JOINTS

ABBREVIATIONS

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ALT	ALTERNATE	INT	INTERIOR
&	AND	LP	LOW POINT
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@	AT	MAX	MISCELLANEOUS
BM	BEAM	MIN	MINIMUM
BOT	BOTTOM	#	NUMBER
B/	BOTTOM OF	OC	ON CENTER
BLDG	BUILDING	OPNG	OPENING
℄	CENTERLINE	OA	OVERALL
C/C	CENTER TO CENTER	PVC	POLYVINYL CHLORIDE
CLR	CLEAR(ANCE)	R	RADIUS
COL	COLUMN	REINF	REINFORCEMENT
CONC	CONCRETE	REQD	REQUIRED
CONST	CONSTRUCTION	SCHED	SCHEDULE
CONT	CONTINUOUS	SECT	SECTION
DET	DETAIL	SPEC	SPECIFICATIONS
DIA	DIAMETER	SS	STAINLESS STEEL
Ø	DIAMETER	STD	STANDARD
DWG	DRAWING	STIRR	STIRRUP
DWL	DOWEL	SYMM	SYMMETRICAL
EF	EACH FACE	T	TOP
EW	EACH WAY	T/	TOP OF
EL	ELEVATION	TYP	TYPICAL
EXP	EXPANSION	UON	UNLESS OTHERWISE NOTED
EXT	EXTERIOR	VAR	VARIES
FTG	FOOTING	VERT	VERTICAL
HP	HIGH POINT	WWF	WELDED WIRE FABRIC
HORIZ	HORIZONTAL	W/	WITH

NOTES:
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Registered Number
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

MAGNOLIA
GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-301

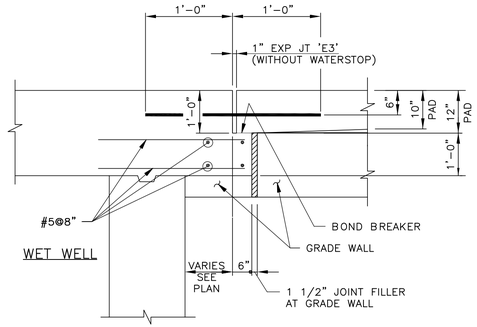
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VERT: 12" = 1'–0"

SHEET NO. 67 OF 225

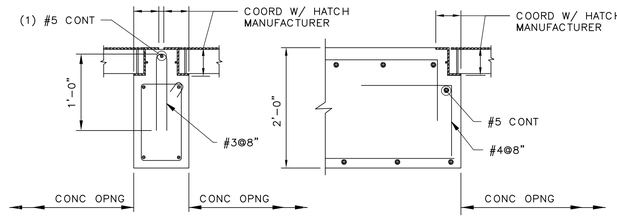
DRAWING SCALE

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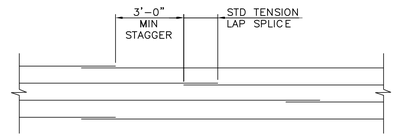
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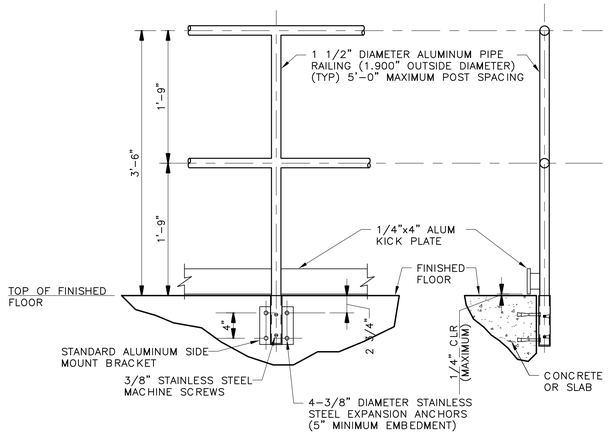
TYPICAL EXPANSION JOINT
(BETWEEN WET WELL AND VALVE PAD)



TYPICAL HATCH FRAME SECTIONS

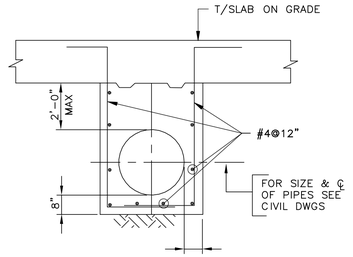


SPLICE LAYOUT FOR HOOP BARS
(WET WELL WALL)



(SIDE OF CONCRETE – FIXED)

ALUMINUM RAILING DETAILS

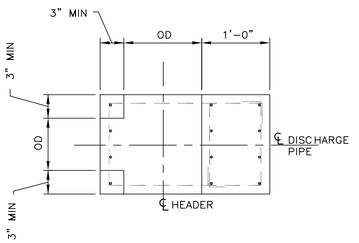


SLAB CONNECTED

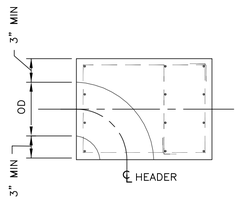
PIPE ENCASEMENT DETAILS

NOTES:

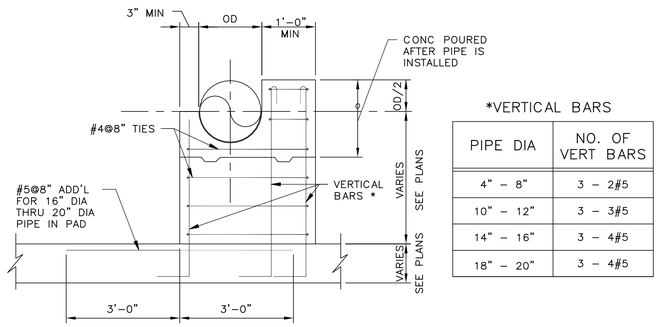
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PLAN – THRUST BLOCK @ TEE



PLAN – THRUST BLOCK @ ELBOW

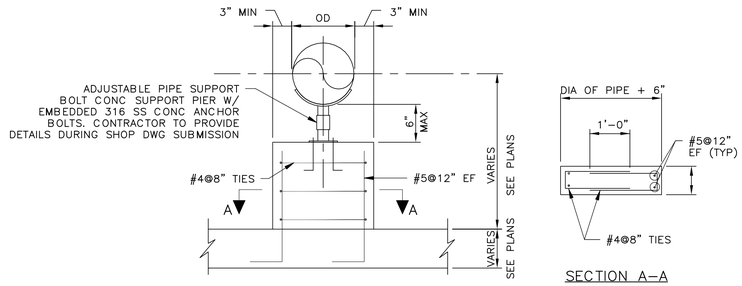


*VERTICAL BARS

PIPE DIA	NO. OF VERT BARS
4" – 8"	3 – 2#5
10" – 12"	3 – 3#5
14" – 16"	3 – 4#5
18" – 20"	3 – 4#5

ELEVATION

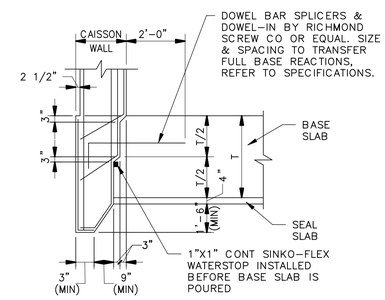
TYPICAL THRUST BLOCK DETAILS



SECTION A–A

NOTES:
1. CONCRETE SUPPORT PIER IS NOT A THRUST BLOCK AND IS NOT INTENDED TO REPLACE THRUST BLOCK PROVIDED AT OTHER LOCATIONS.
2. PLACE SUPPORT PIER APPROX 9" TO 24" FROM CHECK VALVE, SEE CIVIL DRAWINGS. DO NOT PLACE SUPPORT PIER ON TOP OF EXPANSION JOINT.

TYPICAL CONC PIPE SUPPORT PIER DETAIL



CAISSON METHOD TYP BASE DETAIL

NO.	DATE	REVISION	APP.

PLOTTED: 8/21/2025 11:03:59 AM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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THEODORE RICHARD KRULL
143561
AUGUST 21, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

MAGNOLIA

TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-302

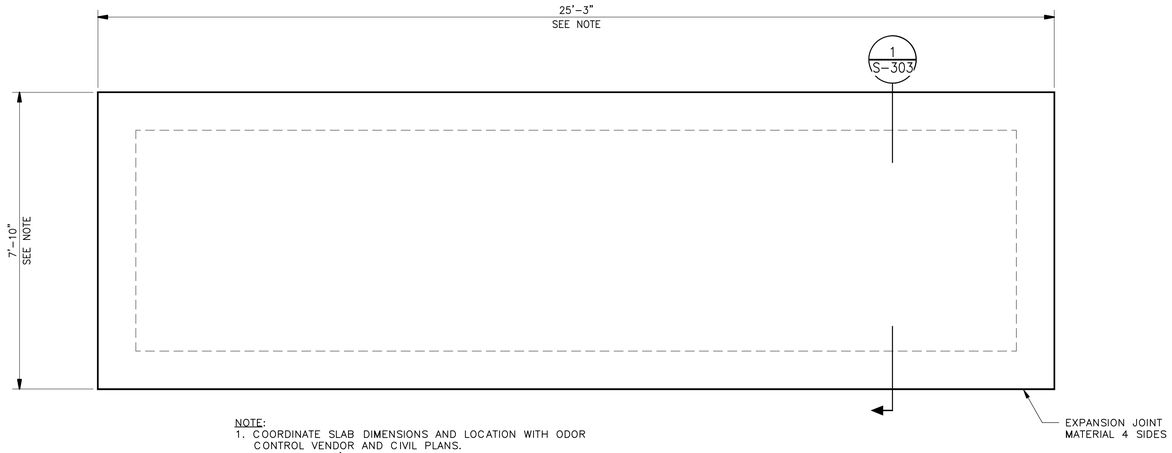
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VERT: As indicated

SHEET NO. 68 OF 225

DRAWING SCALE

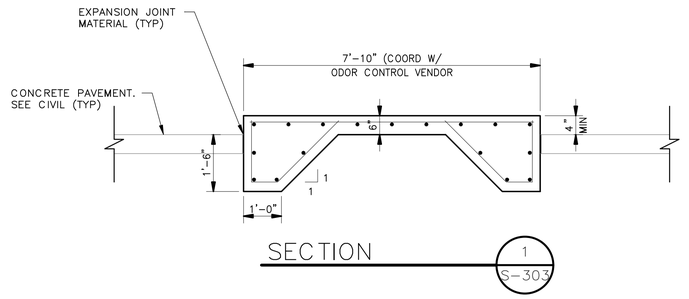
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NOTE:
1. COORDINATE SLAB DIMENSIONS AND LOCATION WITH ODOR CONTROL VENDOR AND CIVIL PLANS.
2. TWO PADS REQ'D SEE CIVIL PLANS.

ODOR CONTROL PAD PLAN



SECTION 1 S-303

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

MAGNOLIA

ODOR CONTROL PAD PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-303

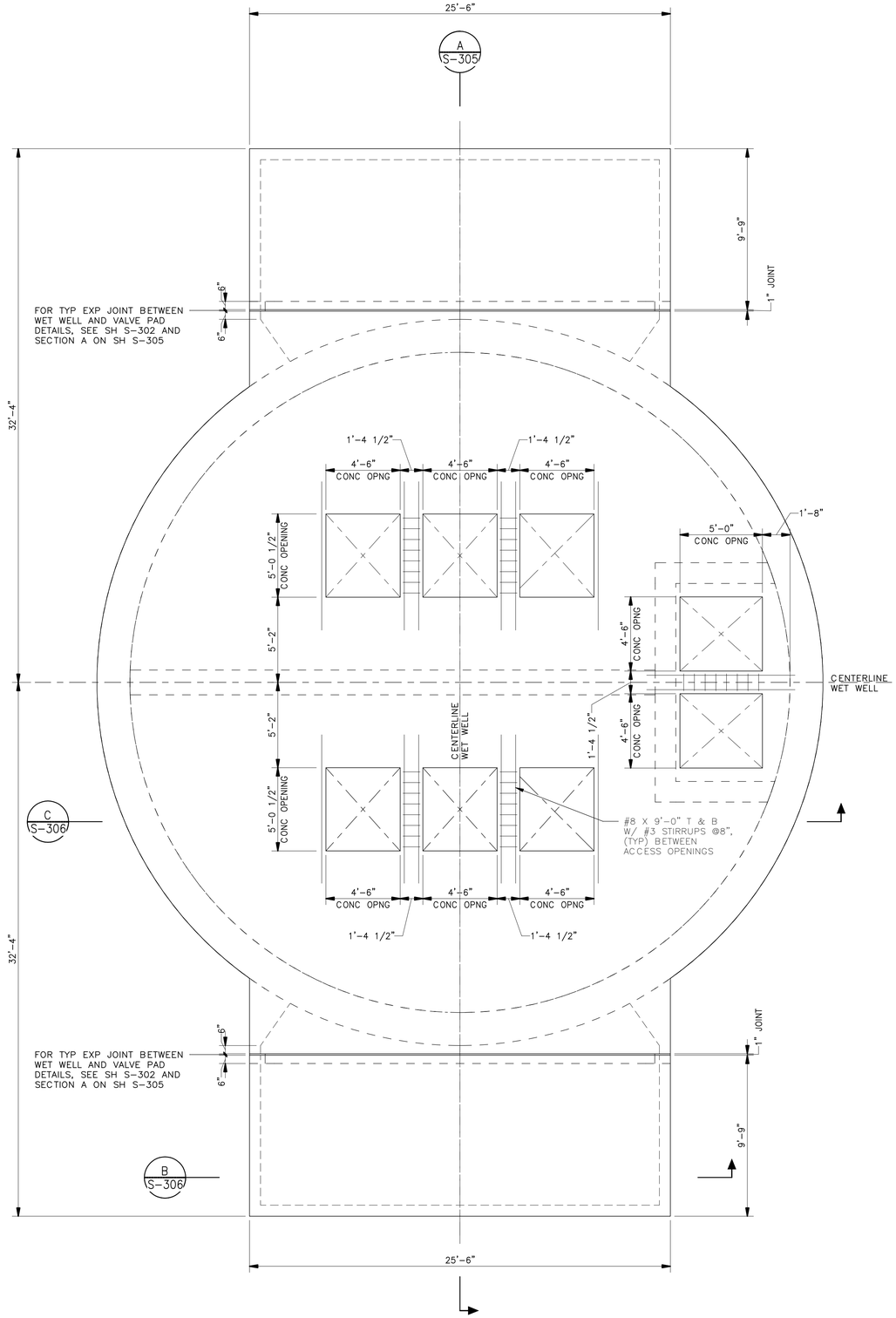
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VERT: 1/2" = 1'-0"

SHEET NO. 69 OF 225

DRAWING SCALE

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PLAN AT GRADE

NOTES:

1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET S-301.
2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
3. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
4. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
5. WET WELL TO BE COATED WITH PROTECTIVE COATING PER PROJECT SPECIFICATIONS. CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. COATING SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

MAGNOLIA

PUMP STATION - PLAN AT GRADE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-304

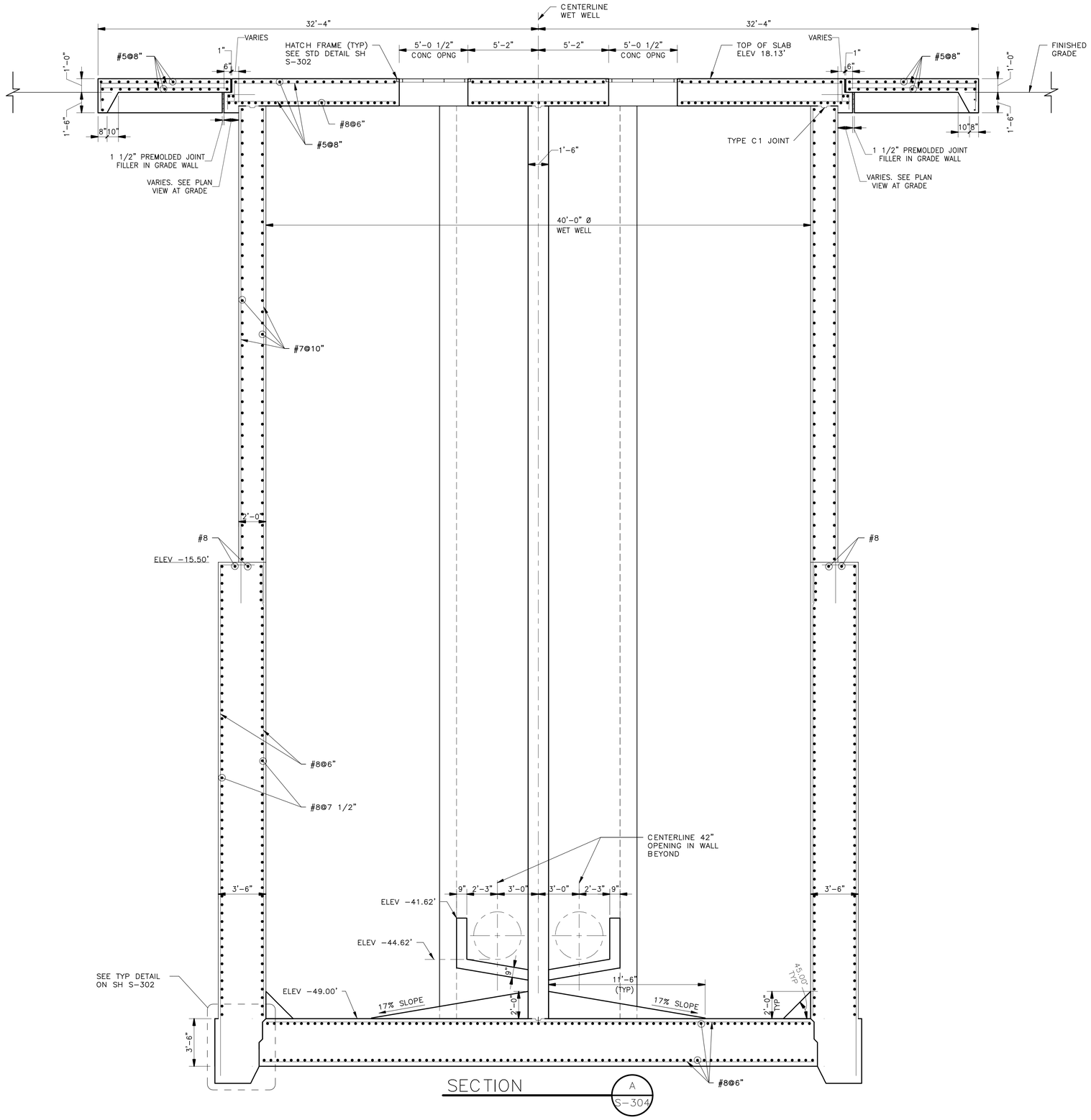
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VERT: 1/4" = 1'-0"

SHEET NO. 70 OF 225

DRAWING SCALE

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

MAGNOLIA
PUMP STATION - CAISSON CONSTRUCTION AT WET WELL

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-305

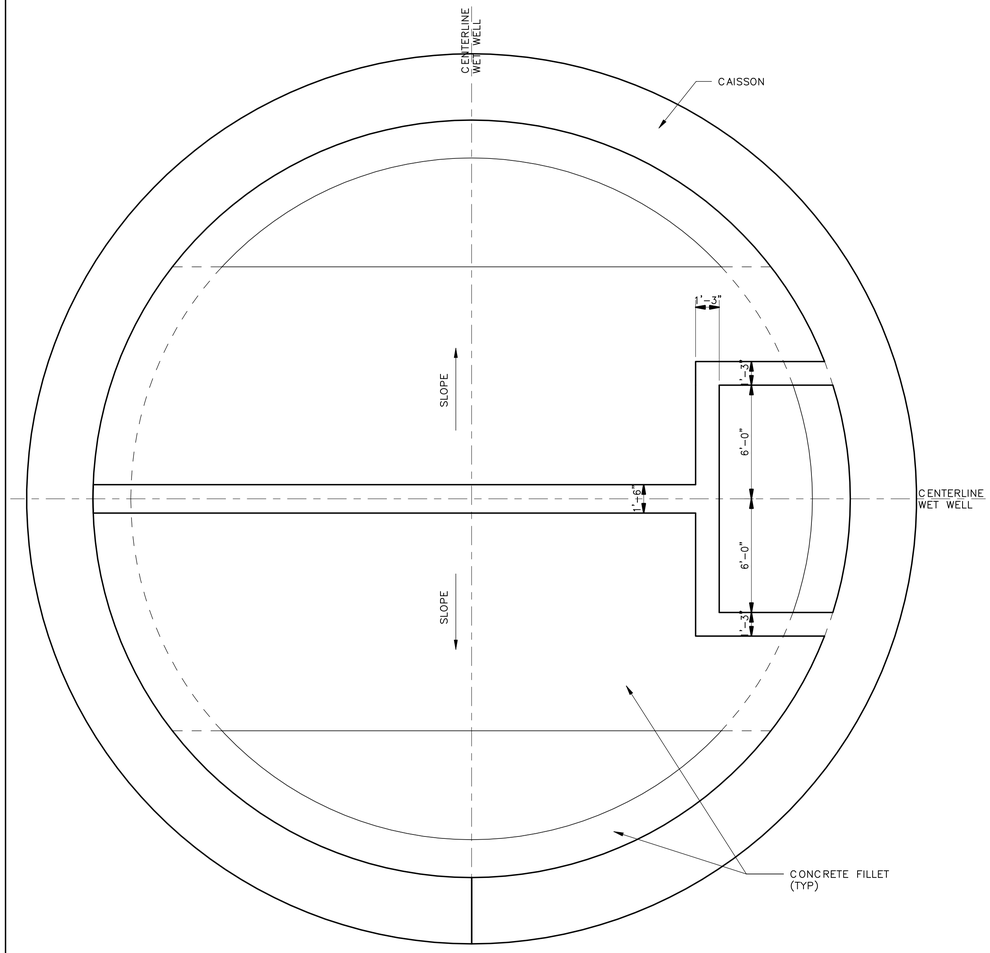
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SHEET NO. 71 OF 225

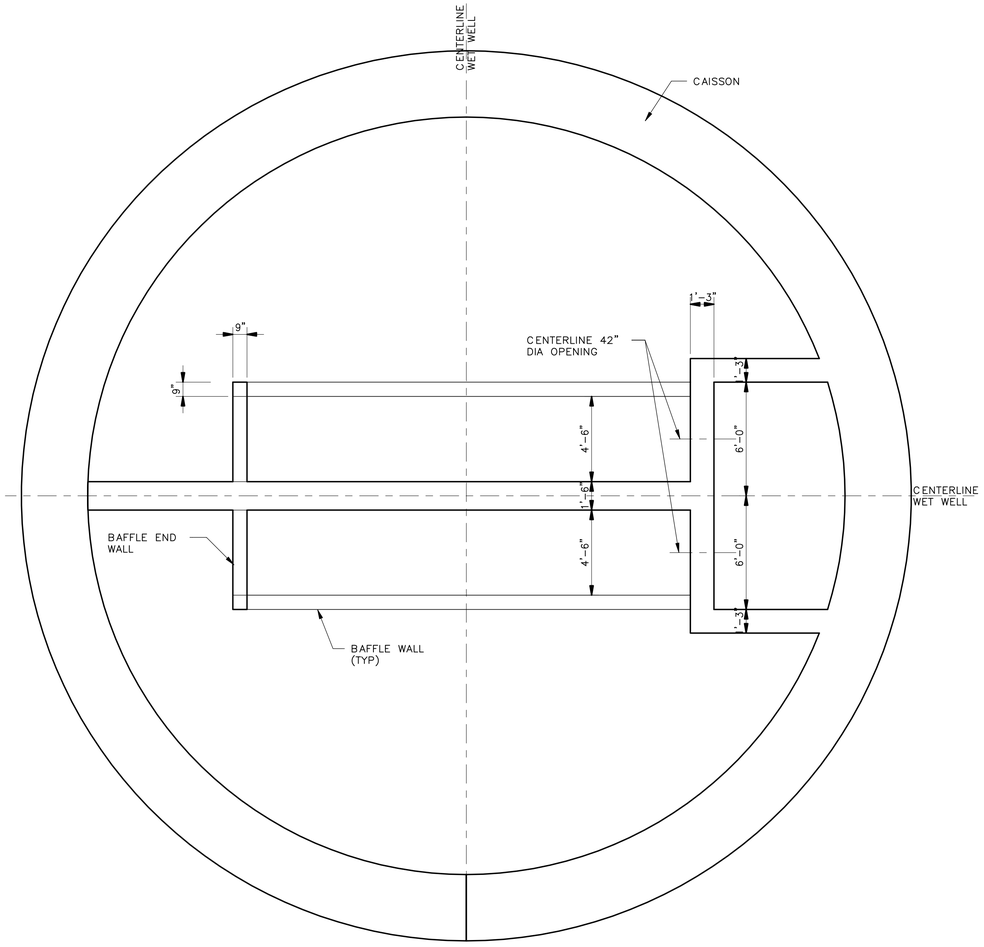
DRAWING SCALE

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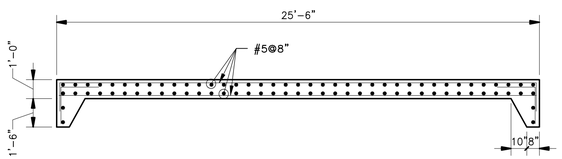
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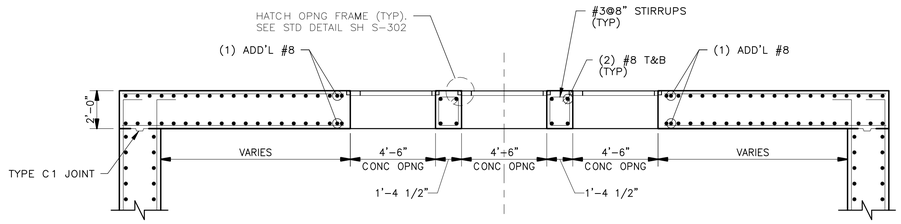
BASE SLAB PLAN



BAFFLE PLAN



SECTION B S-304



SECTION C S-304

NOTES:

1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET S-301.
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

MAGNOLIA

PUMP STATION - BASE SLAB PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-306

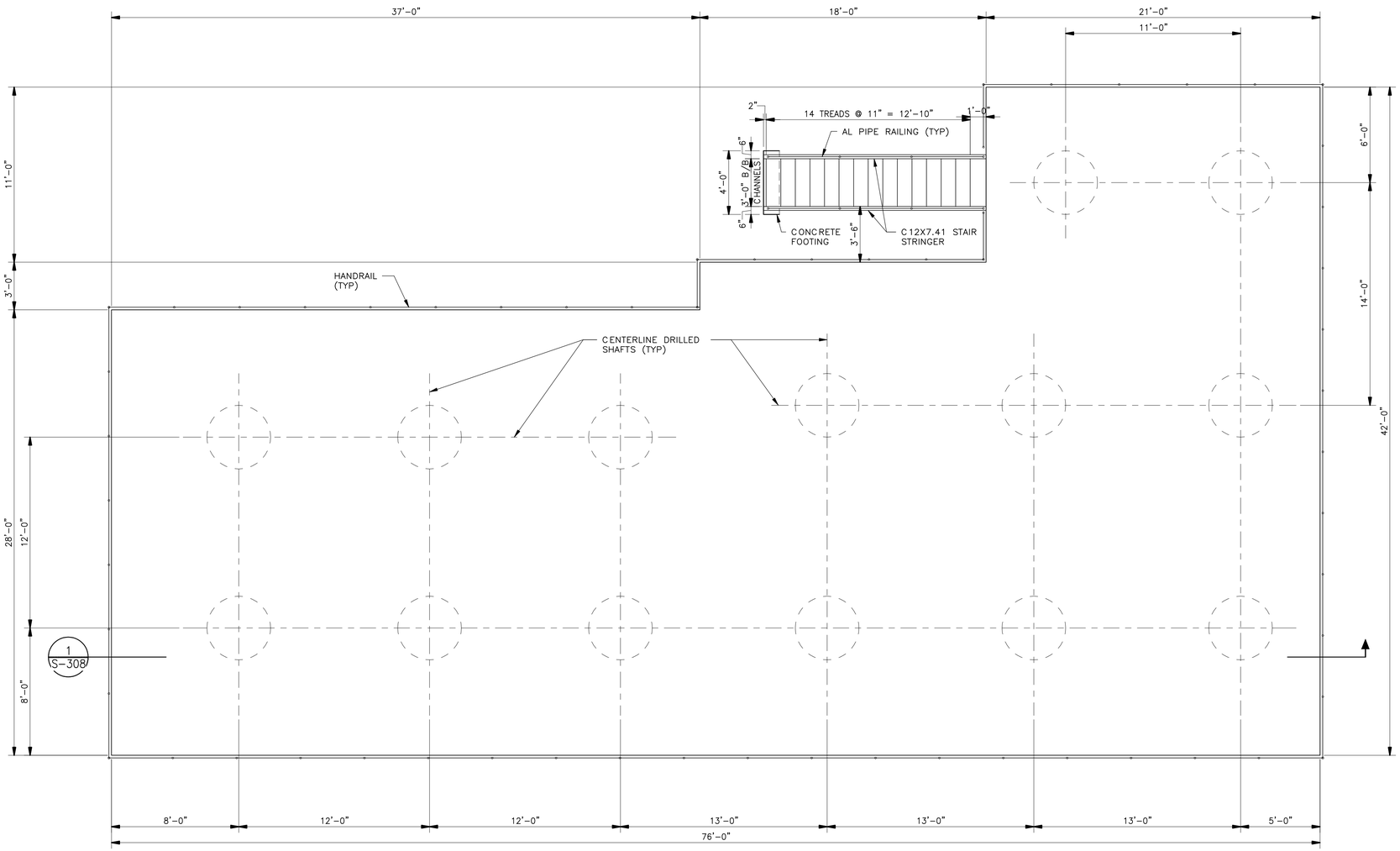
HORIZ: 1/4" = 1'-0"
VERT: 1/4" = 1'-0"

SHEET NO. 72 OF 225

DRAWING SCALE

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PLAN

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

MAGNOLIA

ELECTRICAL PAD - PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-307

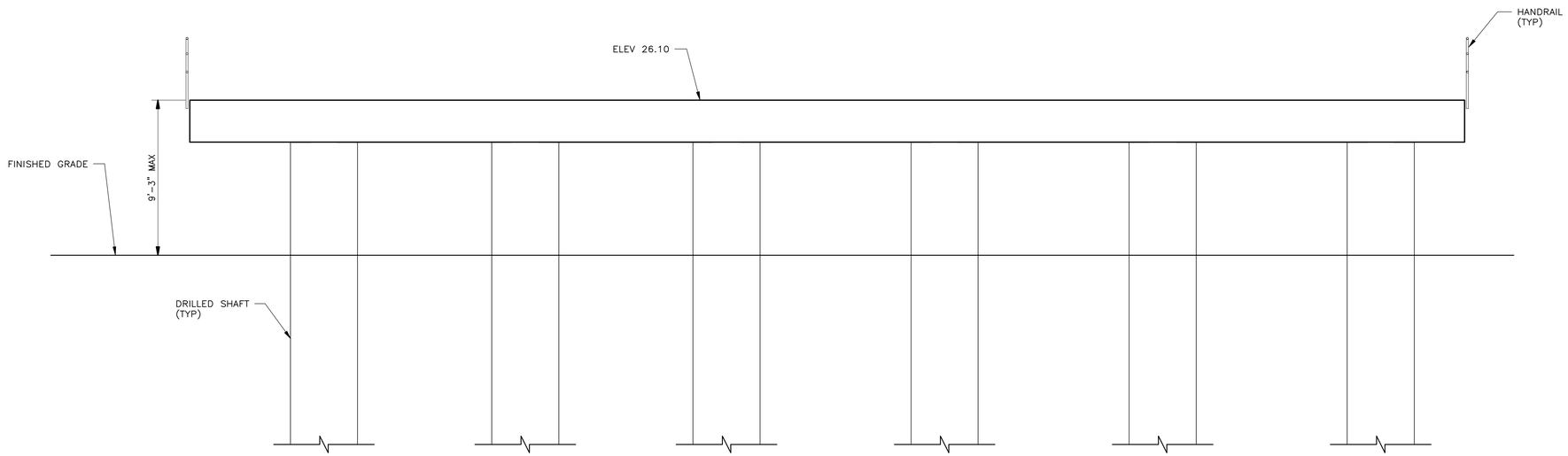
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SHEET NO. 73 OF 225

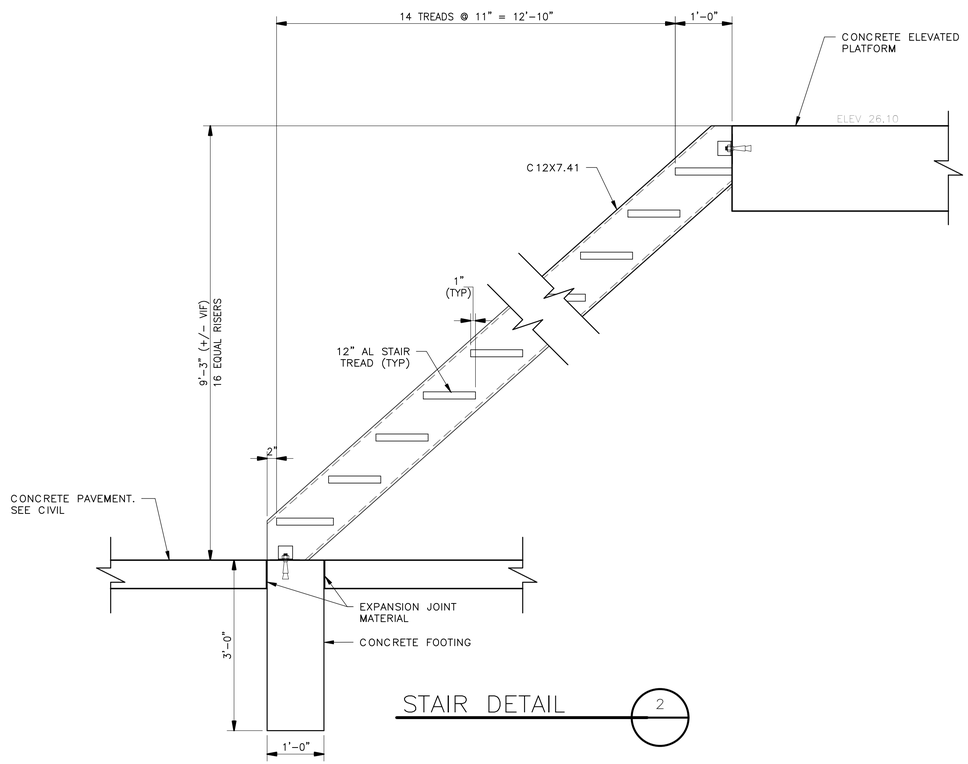
DRAWING SCALE

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SECTION 1 S-307



STAIR DETAIL 2

ALUMINUM STAIR NOTES:

1. ALL MATERIAL TO BE ALUMINUM EXCEPT FASTENERS SHALL BE STAINLESS STEEL.
2. ALUMINUM SURFACES IN CONTACT WITH DISSIMILAR MATERIAL SHALL BE COATED.
3. ALL CONNECTIONS SHALL BE DESIGNED FOR A LOADING EQUIVALENT TO A (2) 3/4" DIAMETER BOLT CONNECTION UNLESS NOTED OTHERWISE.
4. PROVIDE ALUMINUM PIPE RAILING ON TOP OF C12.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

MAGNOLIA

ELECTRICAL PAD - SECTIONS AND DETAILS

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-308

HORIZ: As indicated

VERT: As indicated

SHEET NO. 74 OF 225

DRAWING SCALE

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GENERAL NOTES FOR STRUCTURES

CONCRETE

1. DESIGN SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI-350).
2. ALL REINFORCING BARS SHALL CONFORM TO ASTM A-615, GRADE 60, ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.
3. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.
4. HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7Ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7Ld, UNLESS NOTED OTHERWISE.
5. WALL OR COLUMNS SHALL HAVE DOWELS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL. SEE FOOTING SCHEDULE.
6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:

STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS	4000 PSI
SLABS-ON-GRADE	4000 PSI
LEAN CONCRETE CLASS B	1500 PSI
GROUT FILL CLASS H	3000 PSI

7. UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

SLABS	
TOP AND BOTTOM OF FORMED SLABS	2"
TOP OF WALK AND DRIVEWAY SLABS	2"
SURFACES IN CONTACT WITH LIQUID	2"
BOTTOM OF SLABS ON FILL OR SOIL	3"
FOOTINGS	
TOP AND SIDES	2 1/2"
BOTTOM	3"
WALLS	
LESS THAN 12" THICK	1 1/2"
12" OR OVER IN THICKNESS WITH POURS LESS THAN 10 FEET HIGH	2"
12" OR OVER IN THICKNESS WITH POURS MORE THAN 10 FEET HIGH	2 1/2"
BEAMS AND GIRDERS	
COVER AT TOP, BOTTOM AND SIDES OF LONGITUDINAL REINF	2"
COLUMNS	
COVER FOR VERTICAL BARS	2"

8. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.
9. ANY STOP IN FRAMED CONCRETE WORK MUST BE IN THE CENTER OF THE SPAN AND INCORPORATE AN APPORVED KEYWAY, REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.
10. USE TYPE 'C2' JOINT FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE AND WALLS WHICH SEPARATE AREAS OF SOIL OR LIQUID FROM PERMANENTLY DRY AREAS SUCH AS TUNNELS, GALLERIES, BASEMENT ROOMS, ETC. USE TYPE 'C1' JOINT AT ALL OTHER CONSTRUCTION JOINTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
11. CONCRETE WALLS AND PARTITIONS SHALL BE POURED IN MAXIMUM LENGTHS OF 40 FEET BETWEEN VERTICAL CONSTRUCTION JOINTS.
12. ALL CONCRETE SLABS OVER 8" IN THICKNESS, REINFORCED WITH BARS, AND POURED AGAINST SOIL SHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.
13. ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4" UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.
14. REFERE TO ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION.

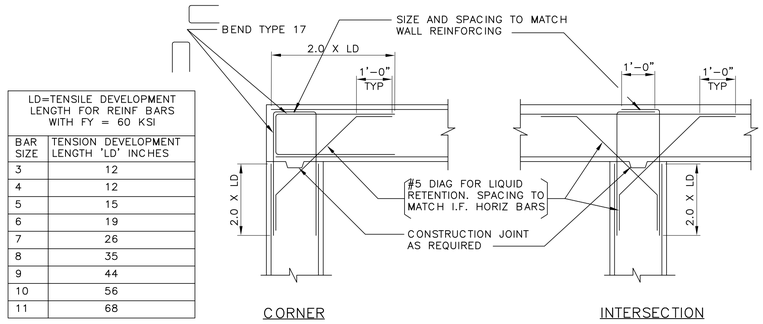
STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS". ALL STRUCTURAL STEEL SHALL BE ASTM A36.
2. ELEVATIONS OF STEEL BEAMS SHOWN ON FRAMING PLANS REFER TO TOP OF FLANGE, UNLESS OTHERWISE NOTED.
3. ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER ASTM A-325 BOLTS EXCEPT AS OTHERWISE SHOWN OR NOTED. ALL CONNECTIONS SHALL BE CAPABLE OF SUPPORTING ON HALF THE MAXIMUM ALLOWABLE UNIFORM LOAD FOR INDICATED BEAM SIZE AND SPAN IN AISC MANUAL OF STEEL CONSTRUCTION, EXCEPT AS OTHERWISE NOTED.
4. FIELD CONNECTIONS SHALL BE BOLTED, EXCEPT AS OTHERWISE SHOWN OR NOTED.
5. ALL WELDING SHALL CONFORM TO THE LATEST SPECIFICATION OF THE AMERICAN WELDING SOCIETY. ALL WELDED CONNECTIONS SHALL BE MADE WITH AWS A5.1 OR A5.5 E70 XX ELECTRODE.
6. ANCHOR BOLTS AND MISC EMBEDDED STEEL ---------- ASTM A36
   ANCHOR BOLTS WHICH ARE SUBMERGED, LOCATED ABOVE A LIQUID SURFACE, OR ARE IN A CORROSIVE ATMOSPHERE ---------- 316 SS
7. ALL EQUIPMENT ANCHOR BOLT DIMENSIONS AND LOCATIONS SHALL BE VERIFIED FROM CERTIFIED VENDOR DRAWINGS, PRIOR TO CONSTRUCTION.

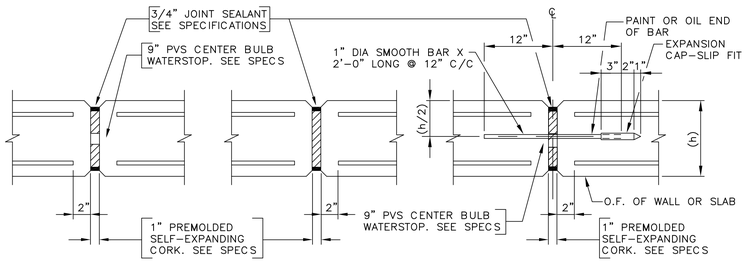
FOUNDATIONS

1. ALLOWABLE SOILD BEARING PRESSURE, EXCAVATION AND BACKFILL FOR FOUNDATIONS AND STRUCTURES SHALL BE AS RECOMMENDED IN THE GEOTECHNICAL REPORT.
2. ALL EXCAVATIONS SHALL BE CARRIED OUT IN THE DRY, AND PROVISIONS SHALL BE MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING AT ALL TIMES.
3. ALL FOUNDATIONS SHALL BE CONSTRUCTED IN EXCAVATIONS FREE OF STANDING WATER.
4. BACKFILL MATERIAL, PLACING AND COMPACTION OF BACKFILL SHALL BE IN ACCORDANCE WITH THE DRAWINGS, AND THE CONTRACT SPECIFICATIONS.

LD=TENSILE DEVELOPMENT LENGTH FOR REINF BARS WITH FY = 60 KSI	
BAR SIZE	TENSION DEVELOPMENT LENGTH 'LD' INCHES
3	12
4	12
5	15
6	19
7	26
8	35
9	44
10	56
11	68



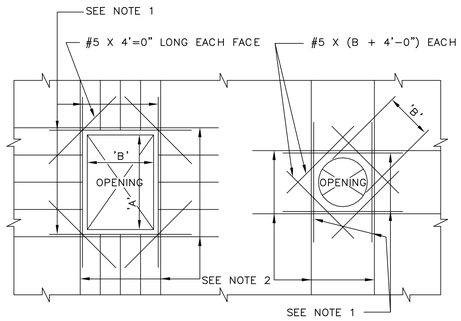
TYPICAL DETAILS OF WALL REINFORCEMENT



CHAMFER EXPANSION JOINTS IN WALLS AND CEILINGS FOR FLOOR JOINTS USE EDGER INSTEAD OF CHAMFERING

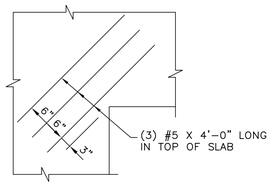
TYPE E1 TYPE E2 TYPE E3

EXPANSION JOINTS



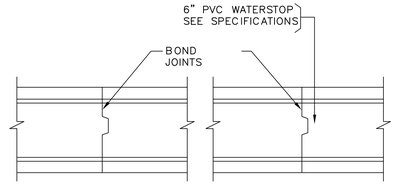
ADDITIONAL REINFORCING STEEL AT OPENINGS IN WALLS AND SLABS

NOTES:
1. PROVIDE (2) #6 X (B + 4'-0") ADDITIONAL REBARS AT TOP AND BOTTOM AND (2) #6 X (A + 4'-0") ADDITIONAL REBARS AT EACH SIDE OF OPENING IN WALLS ONLY.
2. PROVIDE ADDITIONAL BARS EQUAL TO ONE HALF OF BARS INTERRUPTED AT EACH SIDE OF OPENING AT 3" CENTER TO CENTER. THESE BARS SHALL BE ORIGINAL SIZES AND LENGTHS AS THOSE OF THE INTERRUPTED BARS. (TYPICAL FOR OPENINGS IN SLABS AND PRESSURE WALLS).



SPECIAL REINFORCEMENT TO BE PLACED AT ALL INSIDE CORNERS IN SLABS OR WALKWAYS

SLAB DETAIL AT RE-ENTRANT CORNER



TYPE C1 TYPE C2

NOTES:
1. IN JOINTS W/ MORE THAN ONE KEY, PLACE WATERSTOP IN KEY NEAREST TO SURFACE AGAINST EARTH OR WATER
2. REINFORCING STEEL IS CONTINUOUS THROUGH CONSTRUCTION JOINT

CONSTRUCTION JOINTS

ABBREVIATIONS

ADDL	ADDITIONAL	IF	INSIDE FACE
ALT	ALTERNATE	INT	INTERIOR
&	AND	LP	LOW POINT
ARCH	ARCHITECTURAL	MH	MANHOLE
@	AT	MAX	MISCELLANEOUS
BM	BEAM	MIN	MINIMUM
BOT	BOTTOM	#	NUMBER
B/	BOTTOM OF	OC	ON CENTER
BLDG	BUILDING	OPNG	OPENING
C	CENTERLINE	OA	OVERALL
C/C	CENTER TO CENTER	PVC	POLYVINYL CHLORIDE
CLR	CLEAR(ANCE)	R	RADIUS
COL	COLUMN	REINF	REINFORCEMENT
CONC	CONCRETE	REQD	REQUIRED
CONST	CONSTRUCTION	SCHED	SCHEDULE
CONT	CONTINUOUS	SECT	SECTION
DET	DETAIL	SPEC	SPECIFICATIONS
DIA	DIAMETER	SS	STAINLESS STEEL
Ø	DIAMETER	STD	STANDARD
DWG	DRAWING	STIRR	STIRRUP
DWL	DOWEL	SYMM	SYMMETRICAL
EF	EACH FACE	T	TOP
EW	EACH WAY	T/	TOP OF
EL	ELEVATION	TYP	TYPICAL
EXP	EXPANSION	UON	UNLESS OTHERWISE NOTED
EXT	EXTERIOR	VAR	VARIES
FTG	FOOTING	VERT	VERTICAL
HP	HIGH POINT	WWF	WELDED WIRE FABRIC
HORIZ	HORIZONTAL	W/	WITH

NOTES:
1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

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THEODORE RICHARD KRULL
Engineer
143561
Registration Number
AUGUST 21, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

PINE PRAIRIE
GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-401

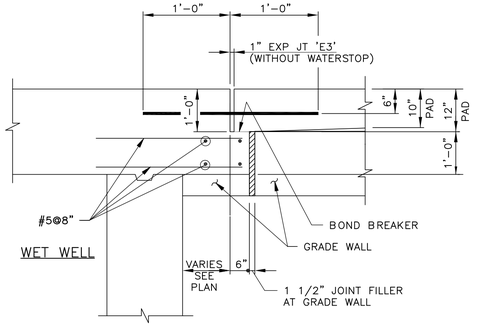
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VERT: 12" = 1'-0"

SHEET NO. 75 OF 225

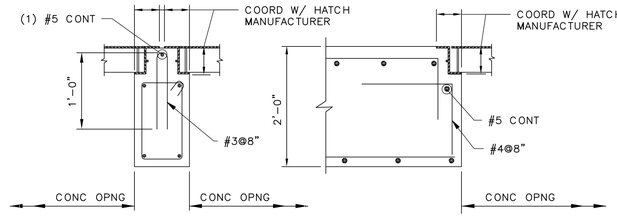
DRAWING SCALE

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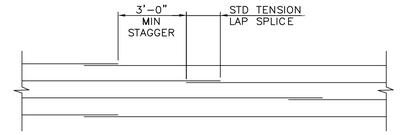
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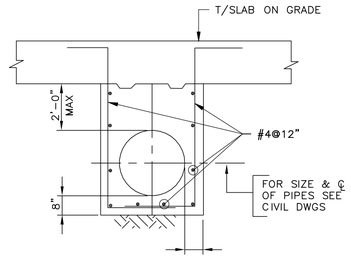
TYPICAL EXPANSION JOINT
(BETWEEN WET WELL AND VALVE PAD)



TYPICAL HATCH FRAME SECTIONS

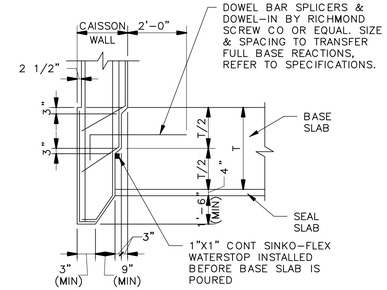


SPLICE LAYOUT FOR HOOP BARS
WET WELL WALL

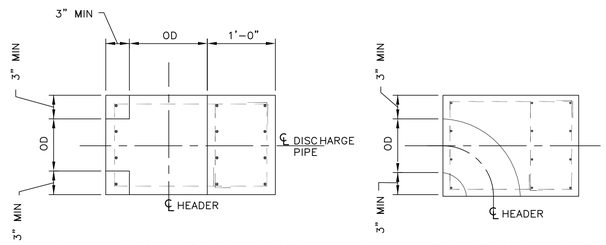


SLAB CONNECTED

PIPE ENCASEMENT DETAILS

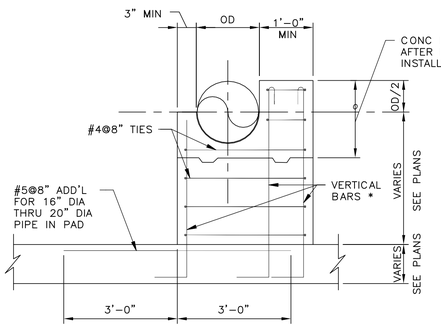


CAISSON METHOD TYP BASE DETAIL



PLAN – THRUST BLOCK @ TEE

PLAN – THRUST BLOCK @ ELBOW

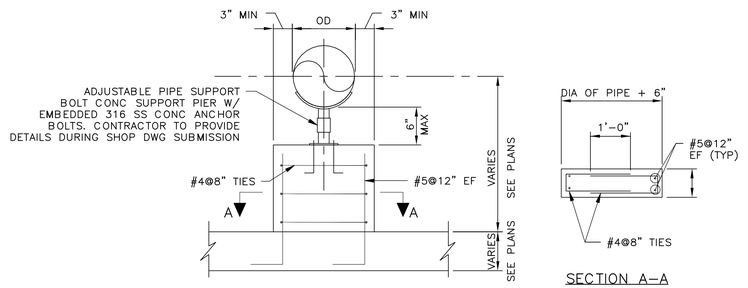


ELEVATION

*VERTICAL BARS

PIPE DIA	NO. OF VERT BARS
4" – 8"	3 – 2#5
10" – 12"	3 – 3#5
14" – 16"	3 – 4#5
18" – 20"	3 – 4#5

TYPICAL THRUST BLOCK DETAILS



SECTION A–A

NOTES:
1. CONCRETE SUPPORT PIER IS NOT A THRUST BLOCK AND IS NOT INTENDED TO REPLACE THRUST BLOCK PROVIDED AT OTHER LOCATIONS.
2. PLACE SUPPORT PIER APPROX 9" TO 24" FROM CHECK VALVE, SEE CIVIL DRAWINGS. DO NOT PLACE SUPPORT PIER ON TOP OF EXPANSION JOINT.

TYPICAL CONC PIPE SUPPORT PIER DETAIL

NOTES:

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143561
AUGUST 21, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

PINE PRAIRIE

TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-402

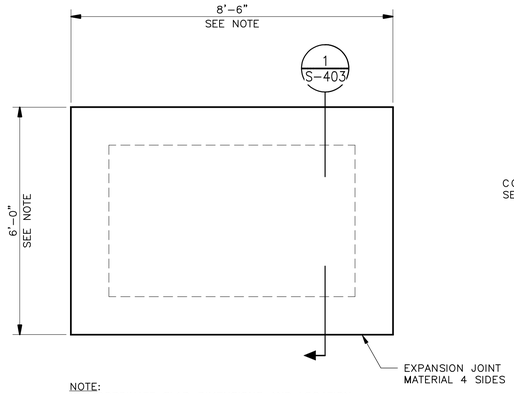
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VERT: 12" = 1'-0"

SHEET NO. 76 OF 225

DRAWING SCALE

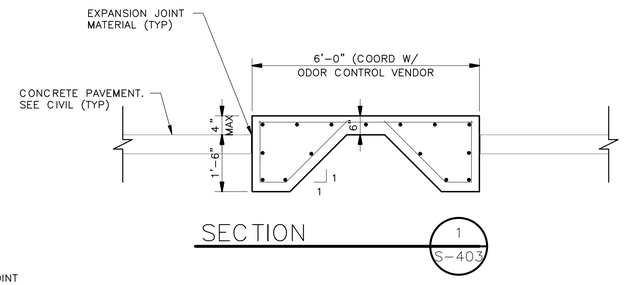
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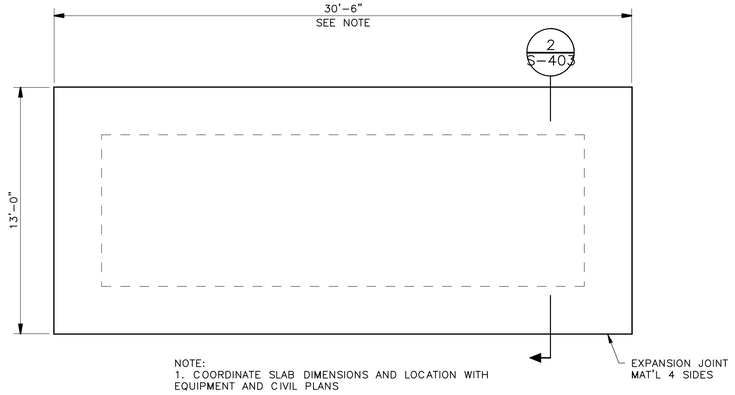
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NOTE:
1. COORDINATE SLAB DIMENSIONS AND LOCATION WITH ODOR CONTROL VENDOR AND CIVIL PLANS.

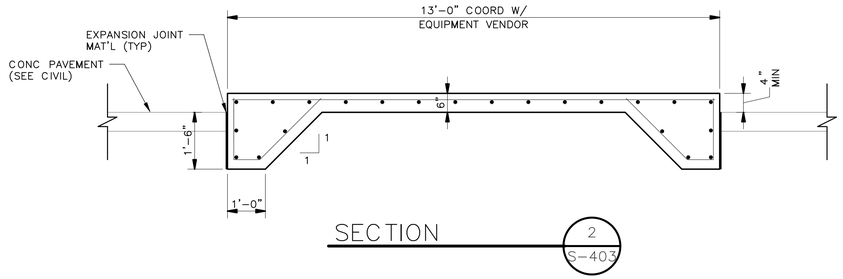
ODOR CONTROL PAD PLAN





NOTE:
1. COORDINATE SLAB DIMENSIONS AND LOCATION WITH EQUIPMENT AND CIVIL PLANS

ELECTRICAL PAD PLAN



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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

PINE PRAIRIE
ODOR CONTROL AND ELECTRICAL PAD PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-403

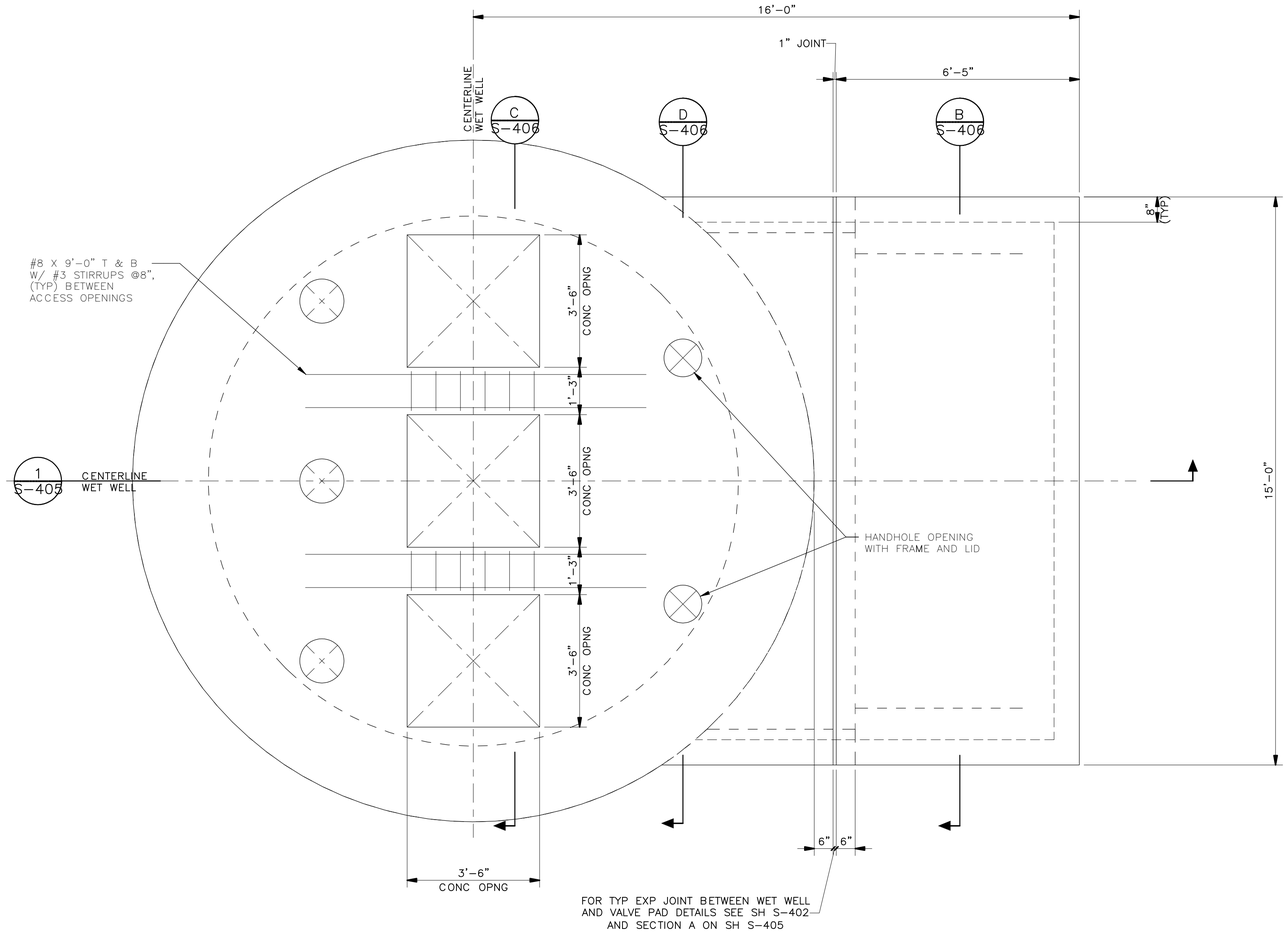
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SHEET NO. 77 OF 225

DRAWING SCALE

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PLAN AT GRADE

2 S-403

NOTES:

1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET S-401.
2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
3. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
4. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
5. WET WELL TO BE COATED WITH PROTECTIVE COATING PER PROJECT SPECIFICATIONS. CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. COATING SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

NO.	DATE	REVISION	APP.

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

PINE PRAIRIE

PUMP STATION - PLAN AT GRADE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-404

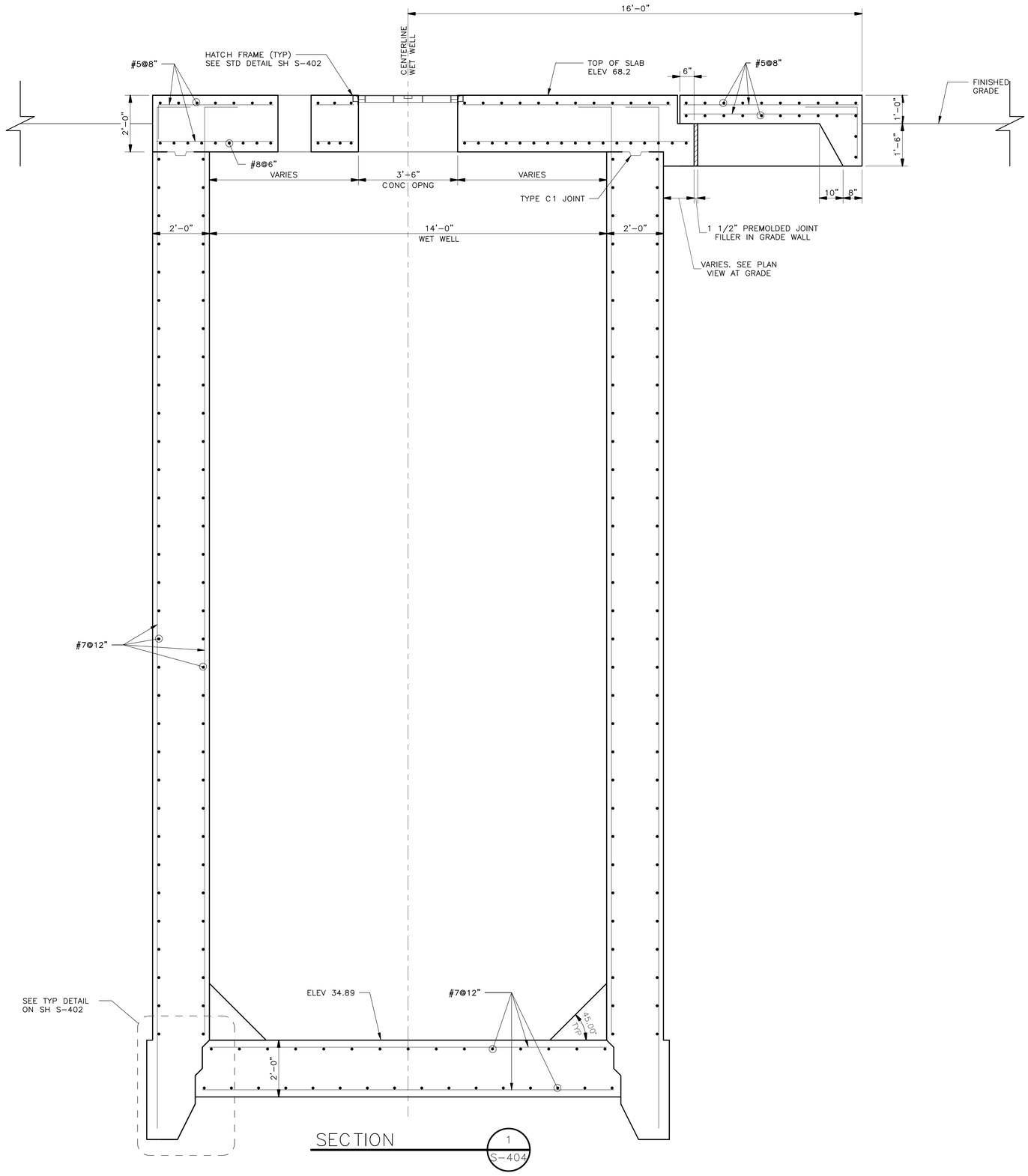
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SECTION 1 / S-404

NOTES:

1. FOR ADDITIONAL REINFORCEMENT AT OPENINGS NOT SHOWN, SEE SHEET S-401.
2. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF THE ACCESS HATCH OPENINGS PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS.
3. DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL CONFIRM.
4. SEE DETAIL AND CIVIL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
5. WET WELL TO BE COATED WITH PROTECTIVE COATING PER PROJECT SPECIFICATIONS. CONSULT WITH COH PROJECT MANAGER FOR APPROVED PRODUCTS. COATING SHALL COVER ALL CONCRETE SURFACES, AND SHALL EXTEND TO A MINIMUM OF 12" BELOW THE LOW WATER ELEVATION.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

PINE PRAIRIE

CAISSON CONSTRUCTION AT WET WELL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-405

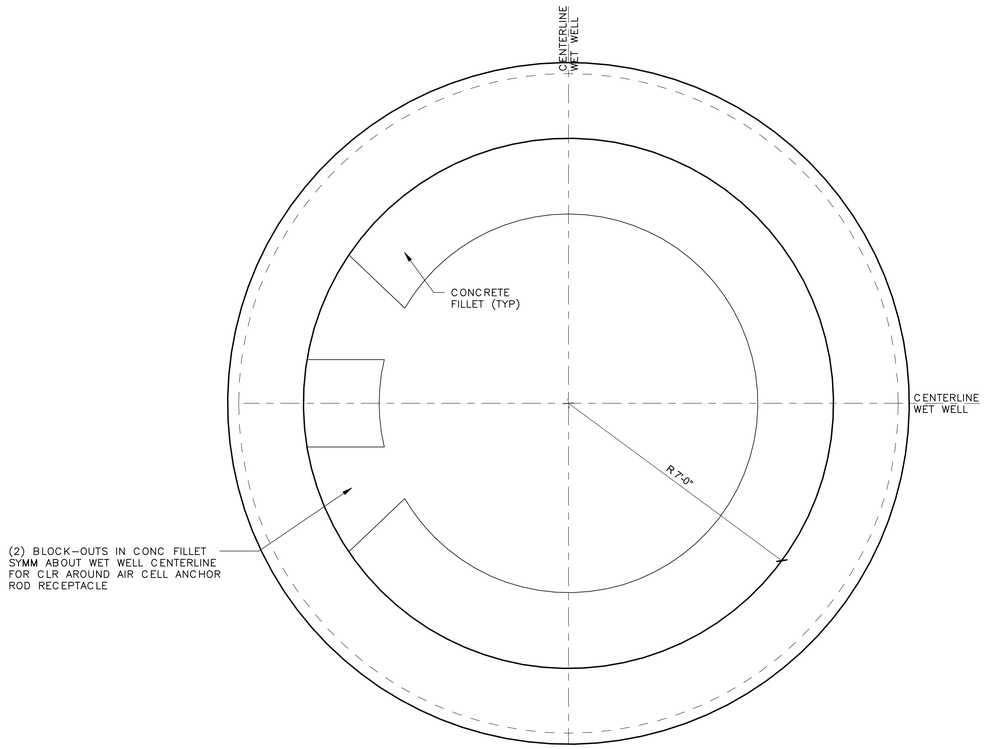
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VERT: 1/2" = 1'-0"

SHEET NO. 79 OF 225

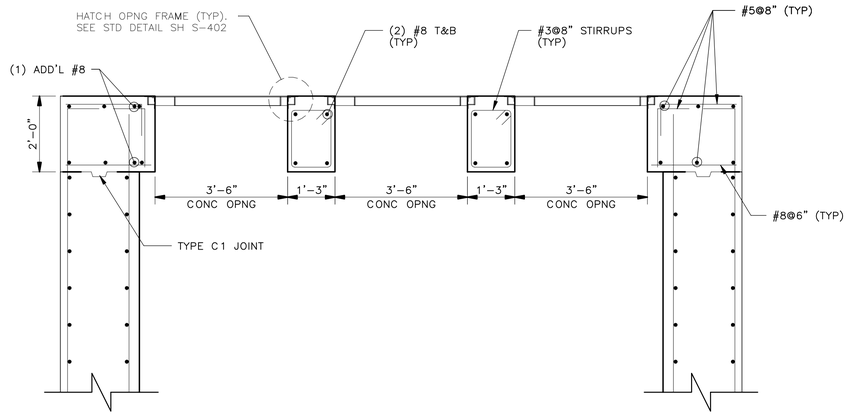
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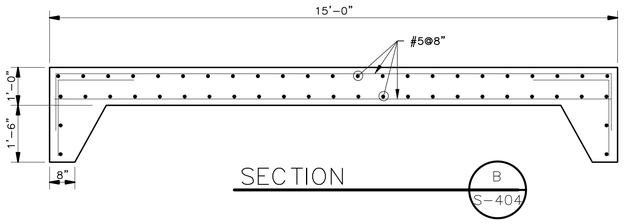
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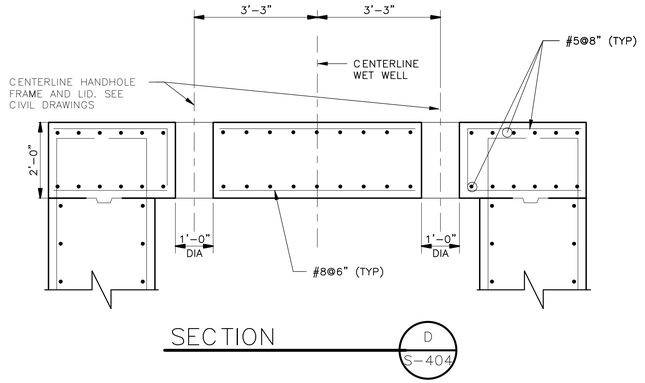
BASE SLAB PLAN



SECTION C / S-404



SECTION B / S-404



SECTION D / S-404

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AUGUST 21, 2025
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

PINE PRAIRIE

BASE SLAB PLAN

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-406

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SHEET NO. 80 OF 225

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GENERAL NOTES FOR STRUCTURES

CONCRETE

1. DESIGN SHALL CONFORM TO THE LATEST BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI–318) WITH SPECIAL REQUIREMENTS OF ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI–350).

2. ALL REINFORCING BARS SHALL CONFORM TO ASTM A–615, GRADE 60, ARRANGEMENT AND DETAILS OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI DETAILING MANUAL, UNLESS OTHERWISE NOTED.

3. ALL SLAB AND BEAM REINFORCEMENT SHALL HAVE A MINIMUM EXTENSION INTO THE SUPPORT IN ACCORDANCE WITH THE LATEST ACI CODE. IF SUCH EXTENSION IS NOT POSSIBLE, BARS SHALL TERMINATE IN STANDARD HOOKS.

4. HORIZONTAL WALL REINFORCEMENT AND TEMPERATURE REINFORCEMENT SHALL LAP A MINIMUM OF 1.7Ld AT SPLICES. WALL DOWELS AND WALL BAR EXTENSIONS AND ALL STRESS SPLICES SHALL LAP A MINIMUM OF 1.7Ld, UNLESS NOTED OTHERWISE.

5. WALL OR COLUMNS SHALL HAVE DOWELS FROM FOUNDATIONS OR CONSTRUCTION BELOW OF SAME SIZE AND SPACING AS WALL OR COLUMN VERTICAL STEEL. SEE FOOTING SCHEDULE.

6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL NOT BE LESS THAN THE FOLLOWING:

STRUCTURAL MEMBERS, FOUNDATIONS, WALLS AND SUSPENDED SLABS	4000 PSI
SLABS–ON–GRADE	4000 PSI
LEAN CONCRETE CLASS B	1500 PSI
GROUT FILL CLASS H	3000 PSI

7. UNLESS OTHERWISE SHOWN, THE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

SLABS	
TOP AND BOTTOM OF FORMED SLABS	2"
TOP OF WALK AND DRIVEWAY SLABS	2"
SURFACES IN CONTACT WITH LIQUID	2"
BOTTOM OF SLABS ON FILL OR SOIL	3"
FOOTINGS	
TOP AND SIDES	2 1/2"
BOTTOM	3"
WALLS	
LESS THAN 12" THICK	1 1/2"
12" OR OVER IN THICKNESS WITH POURS LESS THAN 10 FEET HIGH	2"
12" OR OVER IN THICKNESS WITH POURS MORE THAN 10 FEET HIGH	2 1/2"
BEAMS AND GIRDERS	
COVER AT TOP, BOTTOM AND SIDES OF LONGITUDINAL REINF	2"
COLUMNS	
COVER FOR VERTICAL BARS	2"

8. HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS SHOWN OR NOTED ON THE PLANS ARE RECOMMENDED. ANY DEVIATION FROM THOSE SHOWN SHALL HAVE APPROVAL OF THE ENGINEER.

9. ANY STOP IN FRAMED CONCRETE WORK MUST BE IN THE CENTER OF THE SPAN AND INCORPORATE AN APPORVED KEYWAY, REINFORCEMENT SHALL EXTEND THROUGH THESE JOINTS IF REQUIRED FOR CONTINUITY.

10. USE TYPE 'C2' JOINT FOR ALL CONSTRUCTION JOINTS IN WALLS AND SLABS BELOW GRADE AND WALLS WHICH SEPARATE AREAS OF SOIL OR LIQUID FROM PERMANENTLY DRY AREAS SUCH AS TUNNELS, GALLERIES, BASEMENT ROOMS, ETC. USE TYPE 'C1' JOINT AT ALL OTHER CONSTRUCTION JOINTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

11. CONCRETE WALLS AND PARTITIONS SHALL BE POURED IN MAXIMUM LENGTHS OF 40 FEET BETWEEN VERTICAL CONSTRUCTION JOINTS.

12. ALL CONCRETE SLABS OVER 8" IN THICKNESS, REINFORCED WITH BARS, AND POURED AGAINST SOIL SHALL BE POURED IN A STRIP PATTERN OF 40 FEET OR LESS IN EACH DIRECTION.

13. ALL EXPOSED EDGES OF BEAMS, COLUMNS, SLABS AND WALLS SHALL BE CHAMFERED 3/4" UNLESS MASONRY OR OTHER MEMBERS ARE ERECTED FLUSH WITH THEM.

14. REFERE TO ARCHITECTURAL, PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL SLEEVES, PIPES, CONDUITS AND MISCELLANEOUS ANCHORING DEVICES TO BE INCORPORATED IN THE CONSTRUCTION.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS". ALL STRUCTURAL STEEL SHALL BE ASTM A36.

2. ELEVATIONS OF STEEL BEAMS SHOWN ON FRAMING PLANS REFER TO TOP OF FLANGE, UNLESS OTHERWISE NOTED.

3. ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER ASTM A–325 BOLTS EXCEPT AS OTHERWISE SHOWN OR NOTED. ALL CONNECTIONS SHALL BE CAPABLE OF SUPPORTING ON HALF THE MAXIMUM ALLOWABLE UNIFORM LOAD FOR INDICATED BEAM SIZE AND SPAN IN AISC MANUAL OF STEEL CONSTRUCTION, EXCEPT AS OTHERWISE NOTED.

4. FIELD CONNECTIONS SHALL BE BOLTED, EXCEPT AS OTHERWISE SHOWN OR NOTED.

5. ALL WELDING SHALL CONFORM TO THE LATEST SPECIFICATION OF THE AMERICAN WELDING SOCIETY. ALL WELDED CONNECTIONS SHALL BE MADE WITH AWS A5.1 OR A5.5 E70 XX ELECTRODE.

6. ANCHOR BOLTS AND MISC EMBEDDED STEEL — ASTM A36
   ANCHOR BOLTS WHICH ARE SUBMERGED, LOCATED ABOVE A LIQUID SURFACE, OR ARE IN A CORROSIVE ATMOSPHERE — 316 SS

7. ALL EQUIPMENT ANCHOR BOLT DIMENSIONS AND LOCATIONS SHALL BE VERIFIED FROM CERTIFIED VENDOR DRAWINGS, PRIOR TO CONSTRUCTION.

FOUNDATIONS

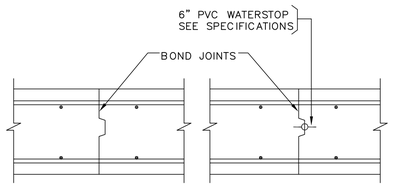
1. ALLOWABLE SOILD BEARING PRESSURE, EXCAVATION AND BACKFILL FOR FOUNDATIONS AND STRUCTURES SHALL BE AS RECOMMENDED IN THE GEOTECHNICAL REPORT.

2. ALL EXCAVATIONS SHALL BE CARRIED OUT IN THE DRY, AND PROVISIONS SHALL BE MADE TO PREVENT THE BOTTOM OF ALL EXCAVATIONS FROM FREEZING OR FLOODING AT ALL TIMES.

3. ALL FOUNDATIONS SHALL BE CONSTRUCTED IN EXCAVATIONS FREE OF STANDING WATER.

4. BACKFILL MATERIAL, PLACING AND COMPACTION OF BACKFILL SHALL BE IN ACCORDANCE WITH THE DRAWINGS, AND THE CONTRACT SPECIFICATIONS.

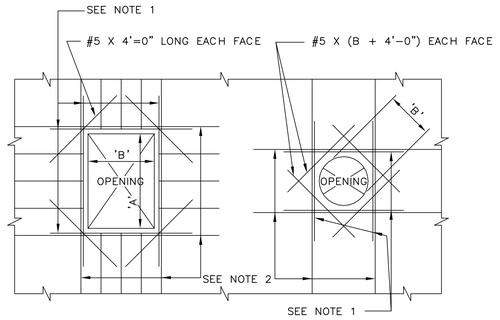
LD=TENSILE DEVELOPMENT LENGTH FOR REINF BARS WITH FY = 60 KSI	
BAR SIZE	TENSION DEVELOPMENT LENGTH 'LD' INCHES
3	12
4	12
5	15
6	19
7	26
8	35
9	44
10	56
11	68



TYPE C1 TYPE C2

NOTES:
1. IN JOINTS W/ MORE THAN ONE KEY, PLACE WATERSTOP IN KEY NEAREST TO SURFACE AGAINST EARTH OR WATER
2. REINFORCING STEEL IS CONTINUOUS THROUGH CONSTRUCTION JOINT

CONSTRUCTION JOINTS



ADDITIONAL REINFORCING STEEL AT OPENINGS IN WALLS AND SLABS

NOTES:
1. PROVIDE (2) #6 X (B + 4'–0") ADDITIONAL REBARS AT TOP AND BOTTOM AND (2) #6 X (A + 4'–0") ADDITIONAL REBARS AT EACH SIDE OF OPENING IN WALLS ONLY.
2. PROVIDE ADDITIONAL BARS EQUAL TO ONE HALF OF BARS INTERRUPTED AT EACH SIDE OF OPENING AT 3" CENTER TO CENTER. THESE BARS SHALL BE ORIGINAL SIZES AND LENGTHS AS THOSE OF THE INTERRUPTED BARS. (TYPICAL FOR OPENINGS IN SLABS AND PRESSURE WALLS).

ABBREVIATIONS

ADDL	ADDITIONAL	IF	INSIDE FACE
ALT	ALTERNATE	INT	INTERIOR
&	AND	LP	LOW POINT
ARCH	ARCHITECTURAL	MH	MANHOLE
@	AT	MAX	MISCELLANEOUS
BM	BEAM	MIN	MINIMUM
BOT	BOTTOM	#	NUMBER
B/	BOTTOM OF	OC	ON CENTER
BLDG	BUILDING	OPNG	OPENING
C	CENTERLINE	OA	OVERALL
C/C	CENTER TO CENTER	PVC	POLYVINYL CHLORIDE
CLR	CLEAR(ANCE)	R	RADIUS
COL	COLUMN	REINF	REINFORCEMENT
CONC	CONCRETE	REQD	REQUIRED
CONST	CONSTRUCTION	SCHED	SCHEDULE
CONT	CONTINUOUS	SECT	SECTION
DET	DETAIL	SPEC	SPECIFICATIONS
DIA	DIAMETER	SS	STAINLESS STEEL
Ø	DIAMETER	STD	STANDARD
DWG	DRAWING	STIRR	STIRRUP
DWL	DOWEL	SYMM	SYMMETRICAL
EF	EACH FACE	T	TOP
EW	EACH WAY	T/	TOP OF
EL	ELEVATION	TYP	TYPICAL
EXP	EXPANSION	UON	UNLESS OTHERWISE NOTED
EXT	EXTERIOR	VAR	VARIES
FTG	FOOTING	VERT	VERTICAL
HP	HIGH POINT	WWF	WELDED WIRE FABRIC
HORIZ	HORIZONTAL	W/	WITH

NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

PLOTTED: 8/21/2025 1:04:33 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:

THEODORE RICHARD KRULL
143561
AUGUST 21, 2025
DATE

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

STATELY OAKS
GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-501

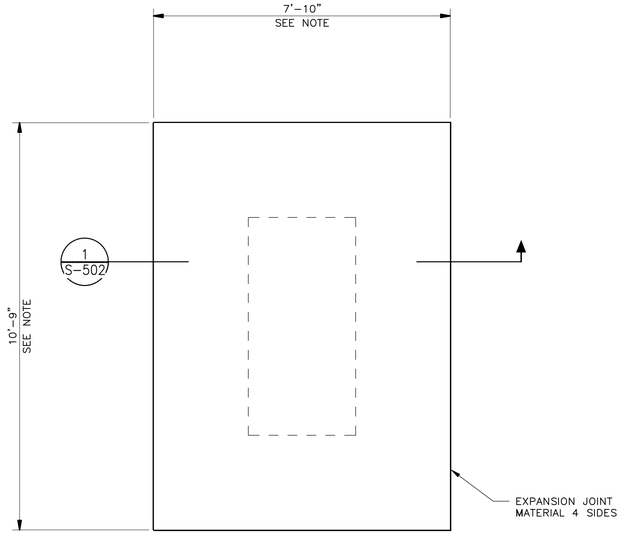
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VERT: 12" = 1'–0"

SHEET NO. 81 OF 225

DRAWING SCALE

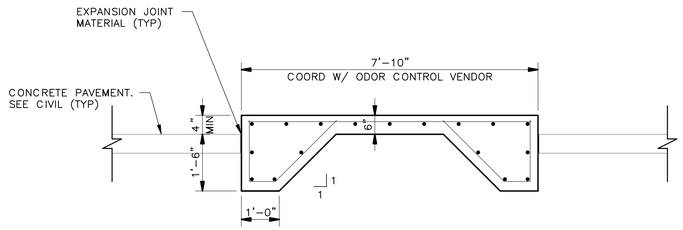
FOR CITY OF HOUSTON USE ONLY

FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_STO_central_R23.rvt



NOTE:
1. COORDINATE SLAB DIMENSIONS AND LOCATION WITH ODOR CONTROL VENDOR AND CIVIL PLANS.

ODOR CONTROL PAD PLAN



SECTION 1 S-502

NO.	DATE	REVISION	APP.

PLOTTED: 8/21/2025 1:04:33 PM

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Registration Number
AUGUST 21, 2025
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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

STATELY OAKS

ODOR CONTROL PAD PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-502

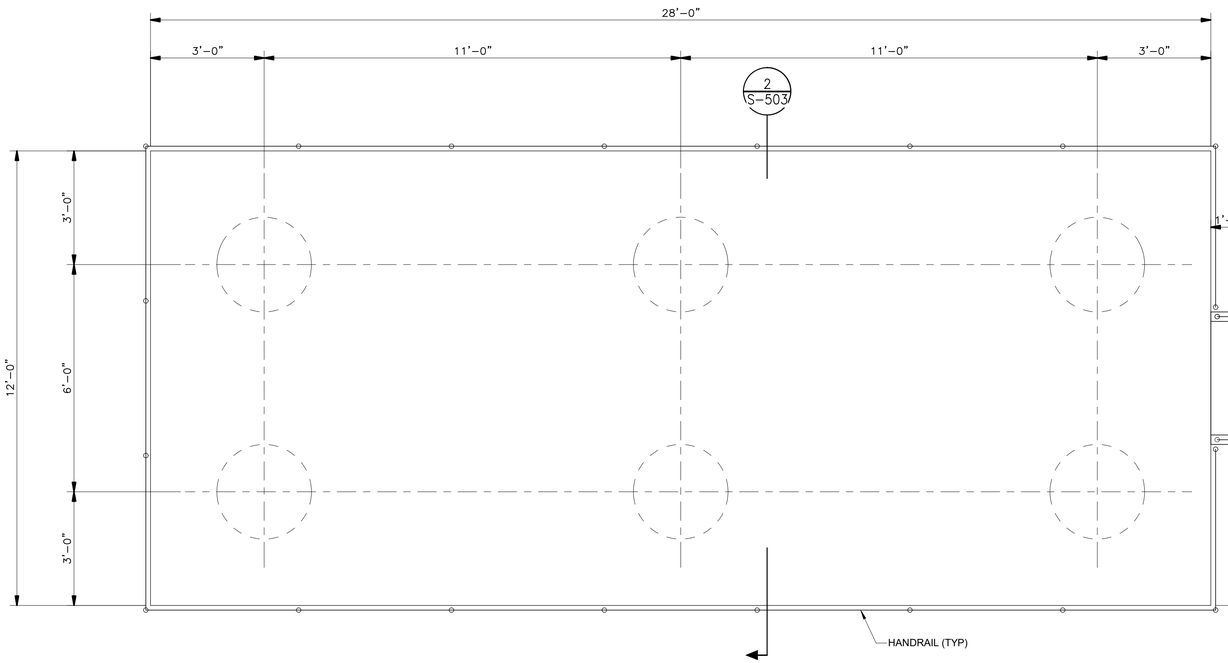
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VERT: 1/2" = 1'-0"

SHEET NO. 82 OF 225

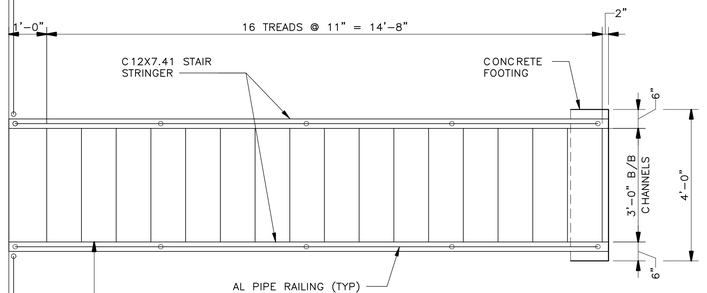
DRAWING SCALE

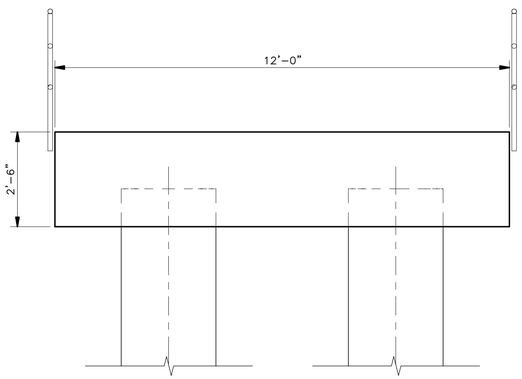
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FILEPATH: Autodesk Docs://081109_COH_Lift_Station_Rehab_and_Reconstruction/081109_S_STO_central_R23.rvt

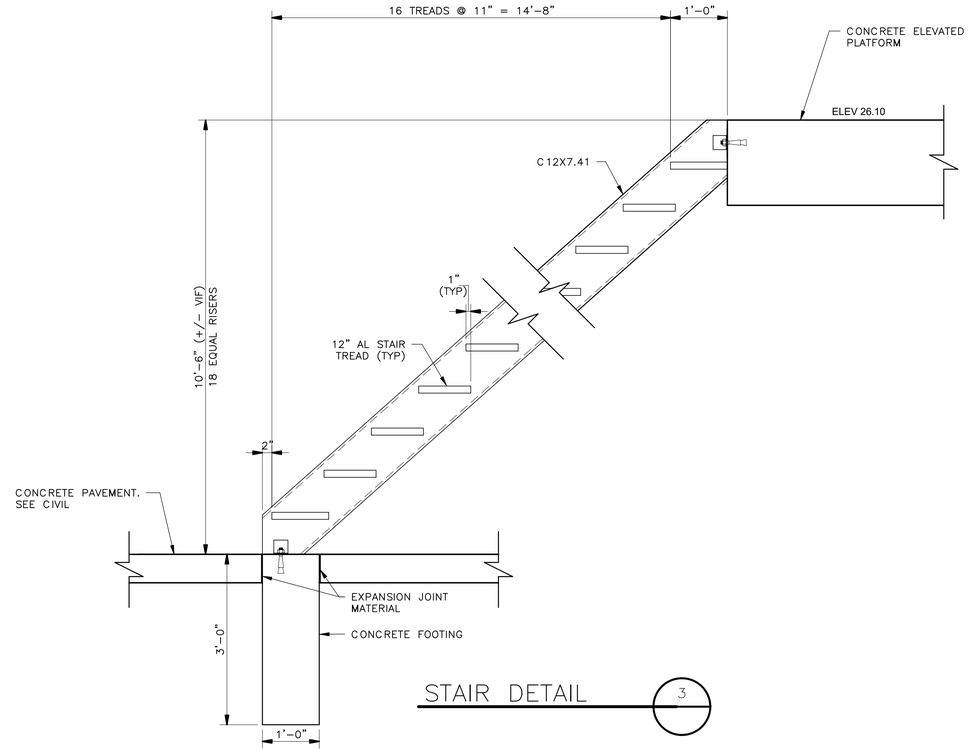


ELECTRICAL SLAB PLAN





SECTION A 2 S-503



STAIR DETAIL 3

NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED WHOLLY OR IN PART WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

NO.	DATE	REVISION	APP.

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Engineer
143561
Registration Number
AUGUST 21, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STRUCTURAL

STATELY OAKS
ELECTRICAL PAD - PLAN, SECTION AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. S-503

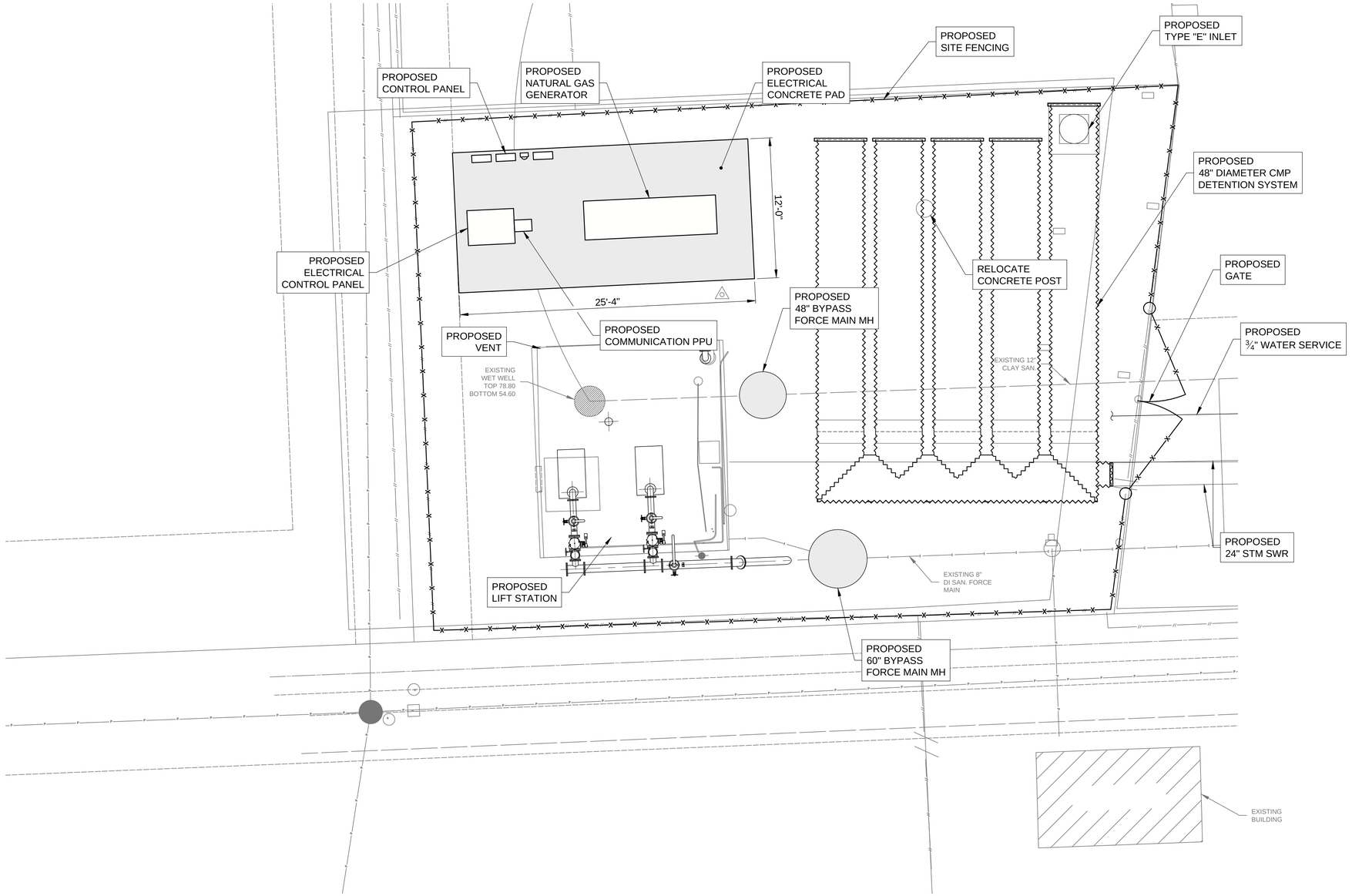
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VERT: As indicated

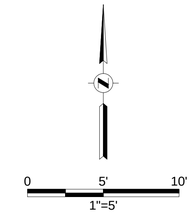
SHEET NO. 83 OF 225

DRAWING SCALE

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NO.	DATE	REVISION	APP.

PEN TABLE: ----

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Crag Alexander Perry
Name
116345
License No.
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

CHESTNUT RIDGE LIFT STATION
PROPOSED
YARD PIPING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

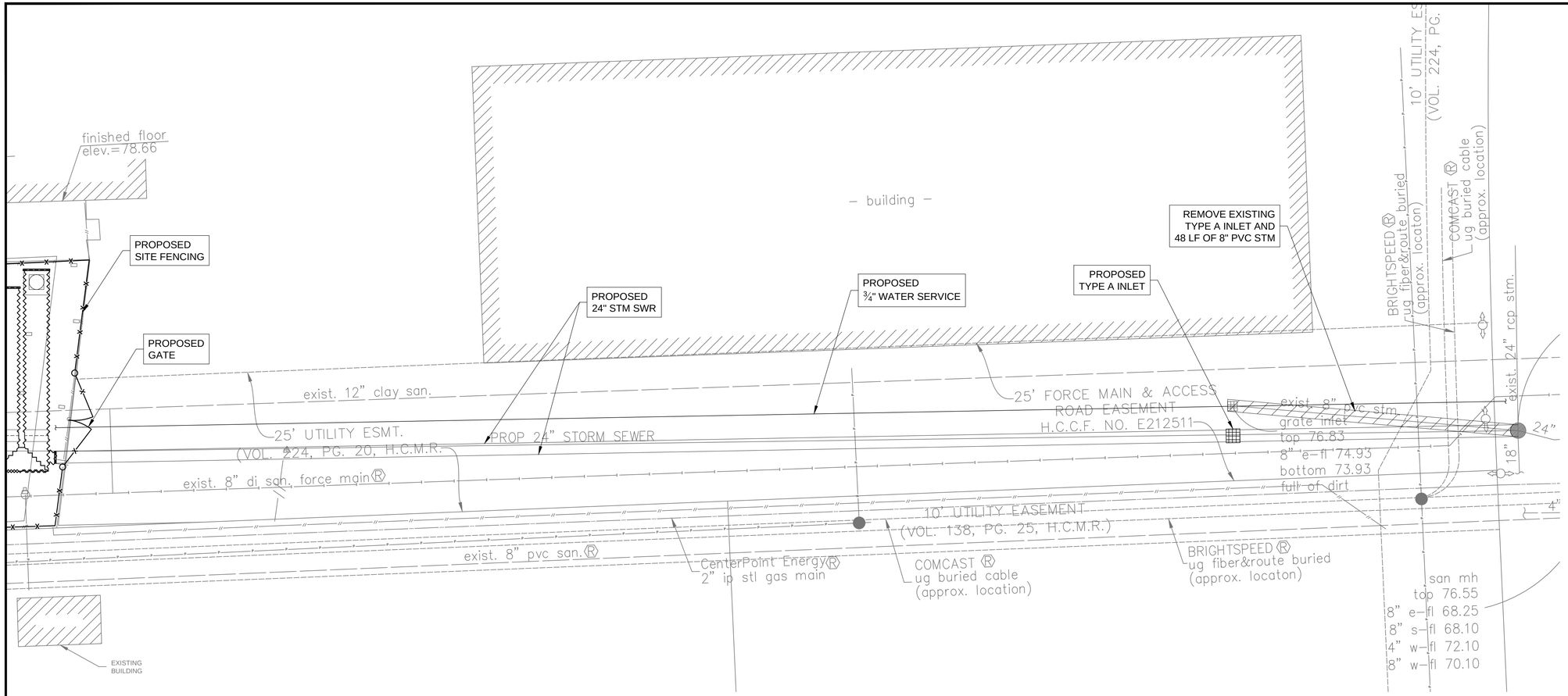
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-101	HORIZ: 1"=5' VERT: NONE
SHEET NO. 84 OF 225	DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Chestnut Ridge\000 Y-101.dwg



NO.	DATE	REVISION	APP.

PEN TABLE: ----

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GANNETT FLEMING

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Date

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

YARD PIPING

CHESTNUT RIDGE LIFT STATION
PROPOSED
YARD PIPING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

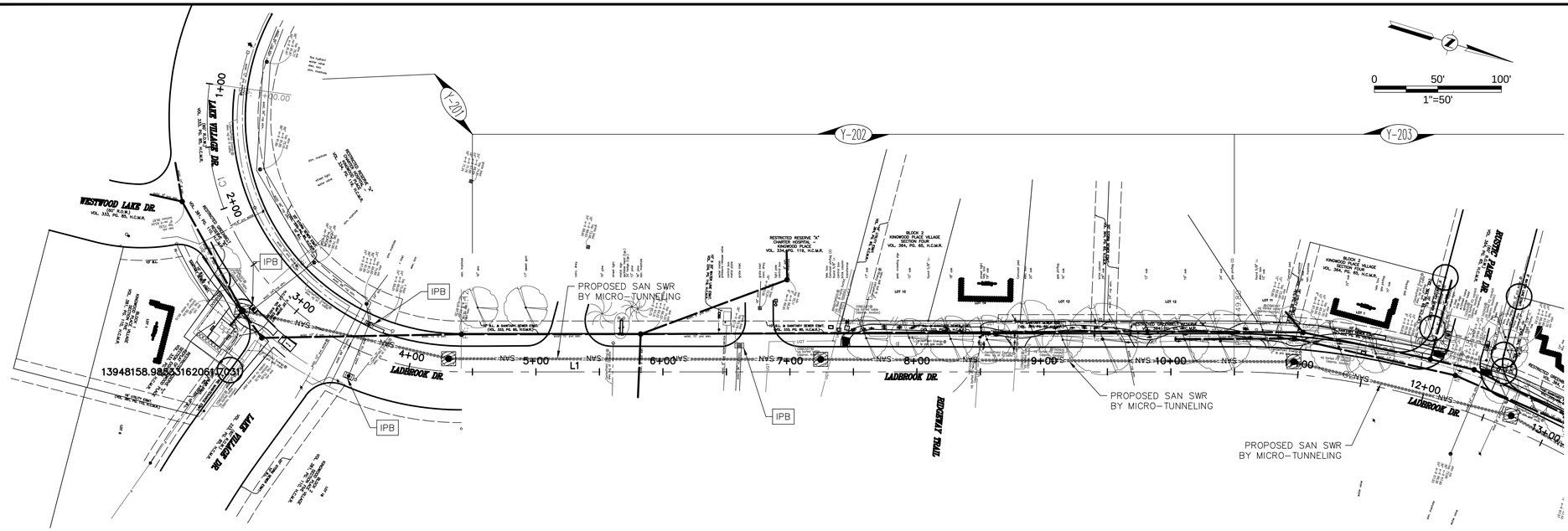
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

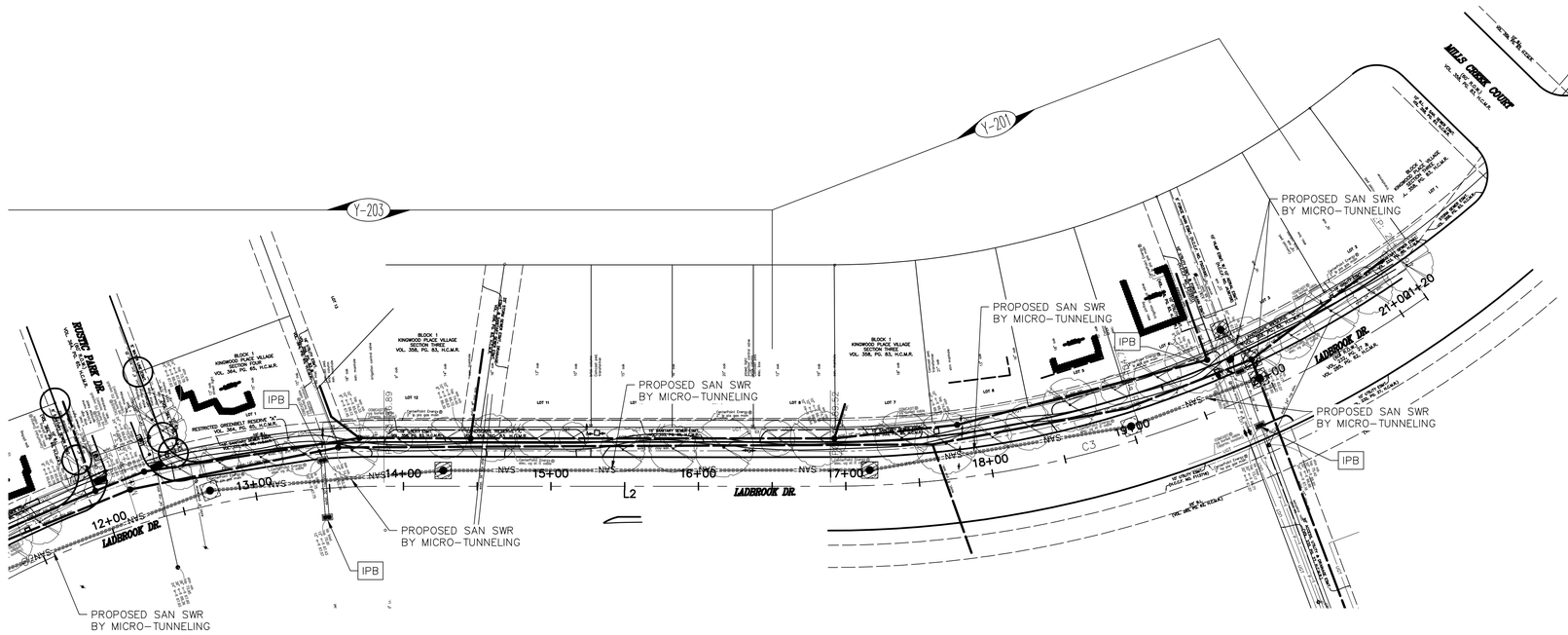
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-102	HORIZ: 1"=5' VERT: NONE
SHEET NO. 85 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Chestnut Ridge\000 Y-102.dwg





NOTES:

1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.

2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.

3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.

4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.

5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.

7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

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Registered Engineer
116345
Registration Number
AUGUST 22, 2025
Date

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

STORM WATER POLLUTION PREVENTION PLAN
LADBROOK DRIVE
OVERALL LAYOUT

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

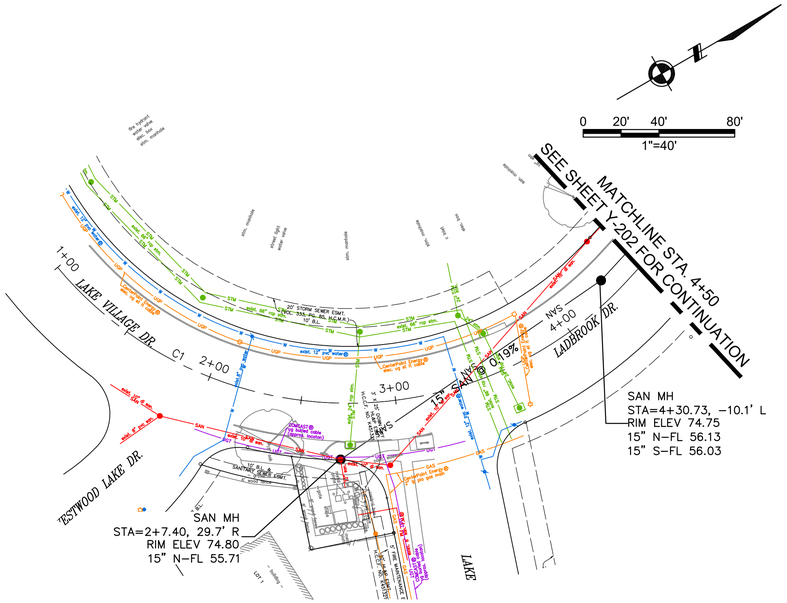
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

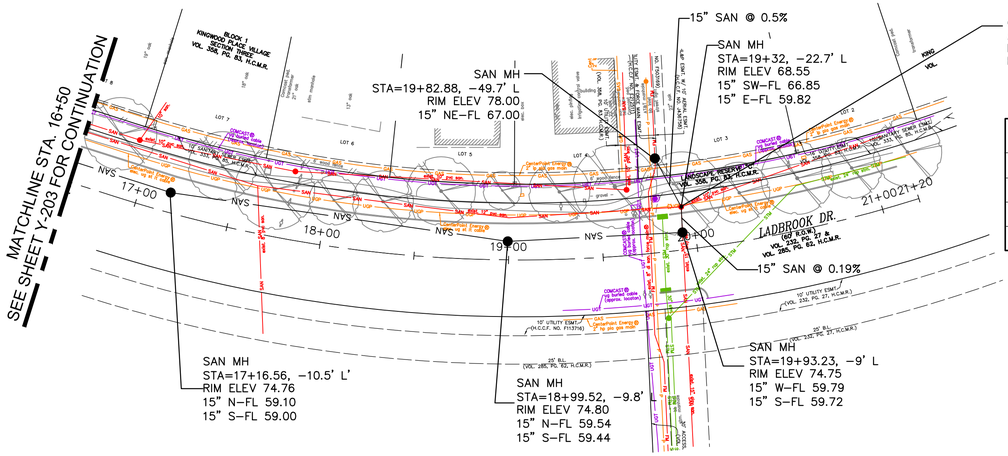
DRAWING NO. Y-201	HORIZ: 1"=50' VERT: NONE
SHEET NO. 86 OF 225	DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\Ladbrook Gravity Line P&P\000 Y-201.dwg



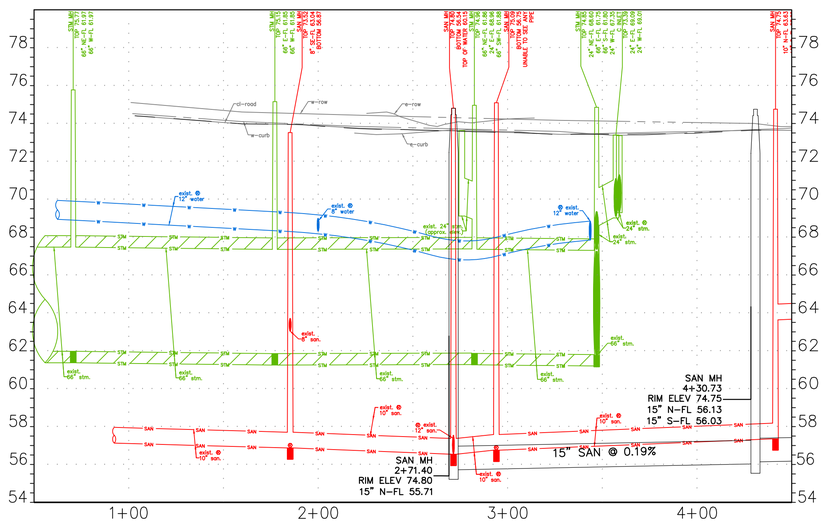
LAKE VILLAGE DR/LADBROOK DR

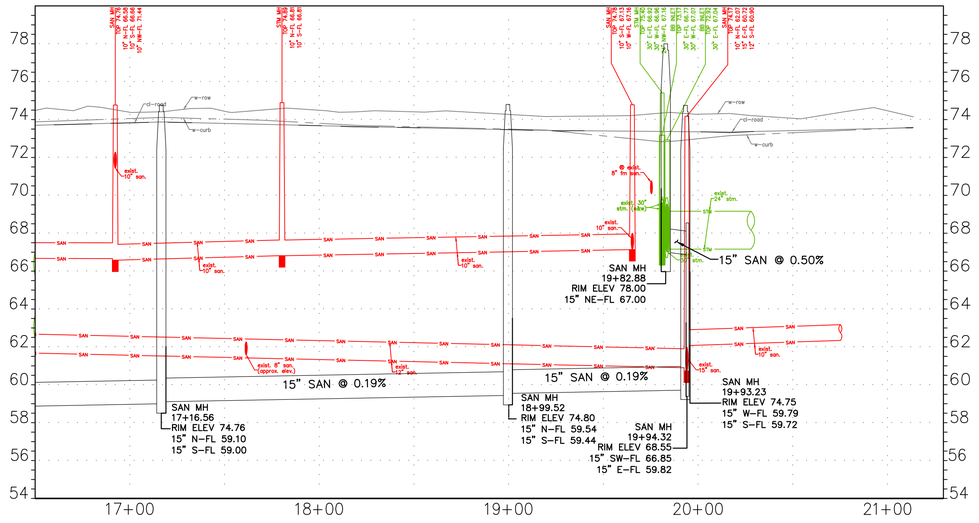


LADBROOK DR

CURVE TABLE				
Curve #	Radius	Length	Chord Direction	CHORD LENGTH
C1	200.00	341.12	N31° 42' 12.71"E	301.25
C2	550.00	337.09	N0° 23' 57.47"E	331.84
C3	700.00	430.45	N0° 20' 27.69"E	423.70

LINE TABLE		
Line #	Length	Direction
L1	608.67	N17° 09' 31.92"W
L2	302.63	N17° 57' 26.86"E





NO.	DATE	REVISION	APP.

PLOTTED: 8/21/2025 4:40 PM PEN TABLE: ----

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P.E.
116345
Registered Number
MAY 01, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

LADBROOK DRIVE
PLAN AND PROFILE
STA 1+00 TO 4+50
STA 16+50 TO END

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-202

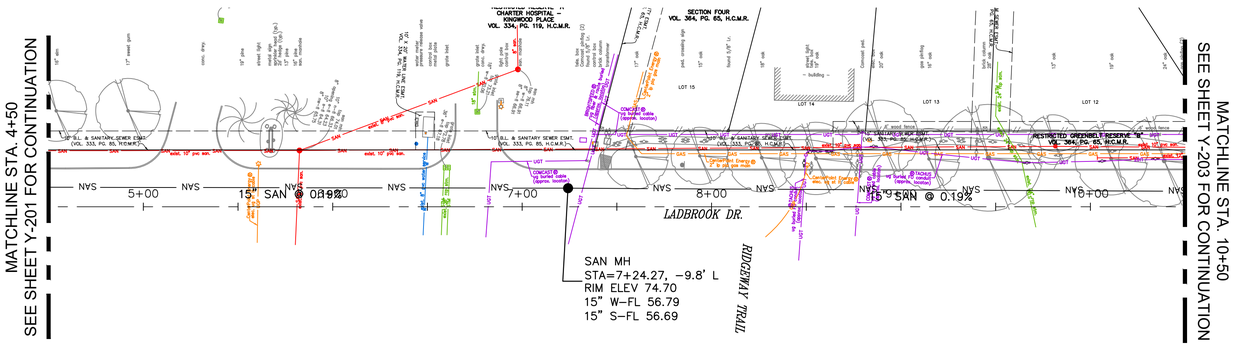
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VERT: 1"=2'

SHEET NO. 87 OF 225

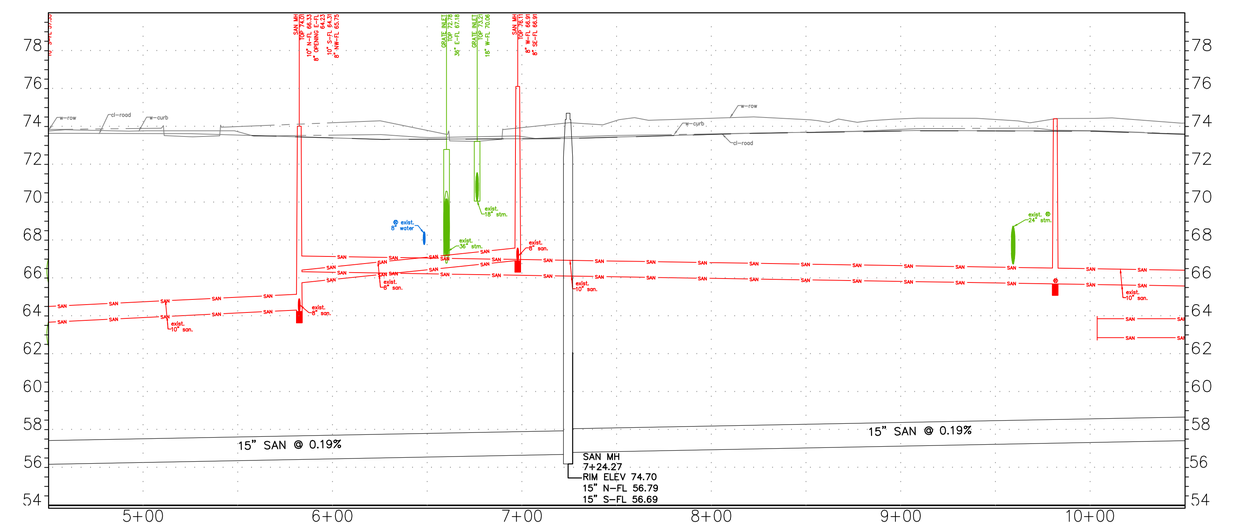
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Ladbrook Gravity Line P&P\000 Y-202.dwg



LADBROOK DR



CURVE TABLE				
Curve #	Radius	Length	Chord Direction	CHORD LENGTH
C1	200.00	341.12	N31° 42' 12.71"E	301.25
C2	550.00	337.09	N0° 23' 57.47"E	331.84
C3	700.00	430.45	N0° 20' 27.69"E	423.70

LINE TABLE		
Line #	Length	Direction
L1	608.67	N17° 09' 31.92"W
L2	302.63	N17° 57' 26.86"E

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 4:42 PM

GANNETT FLEMING

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Registration Number
MAY 01, 2025
date

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

LADBROOK DRIVE
PLAN AND PROFILE
STA 4+50 TO 10+50

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-203

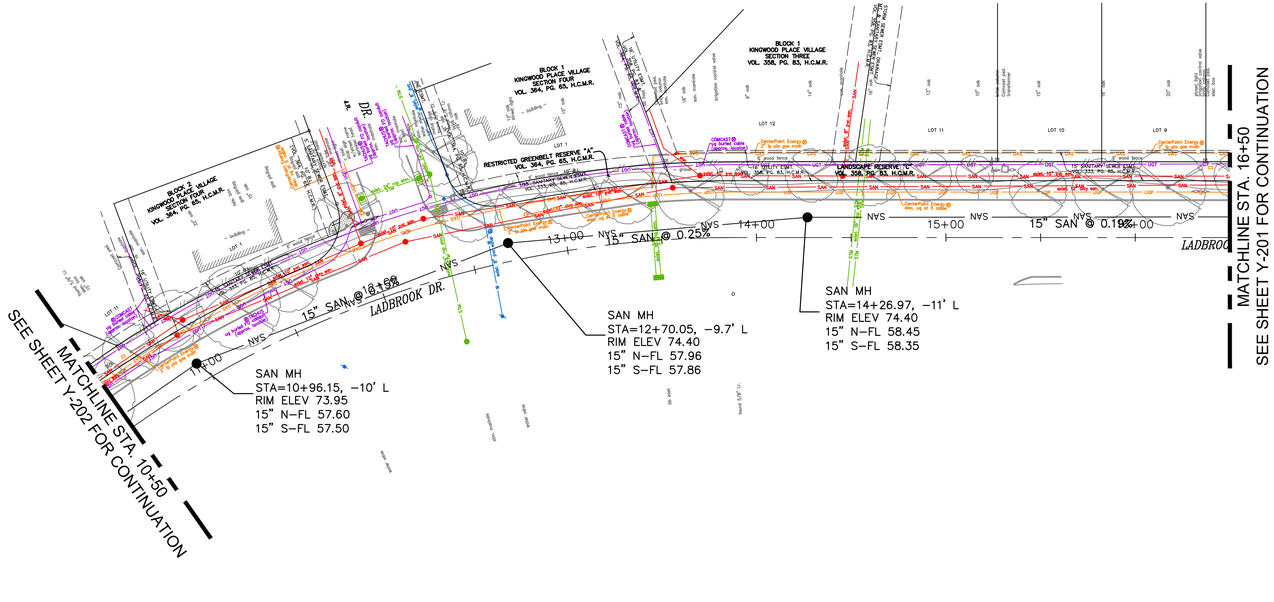
HORIZ: 1"=40'
VERT: 1"=2'

SHEET NO. 88 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Ladbrook Gravity Line P&P\000 Y-203.dwg



CURVE TABLE				
Curve #	Radius	Length	Chord Direction	CHORD LENGTH
C1	200.00	341.12	N31° 42' 12.71"E	301.25
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LINE TABLE		
Line #	Length	Direction
L1	608.67	N17° 09' 31.92"W
L2	302.63	N17° 57' 26.86"E

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 4:43 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-9570

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Craig Alexander Perry
116345
MAY 01, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

LADBROOK DRIVE
PLAN AND PROFILE
STA 10+50 TO 16+50

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-204

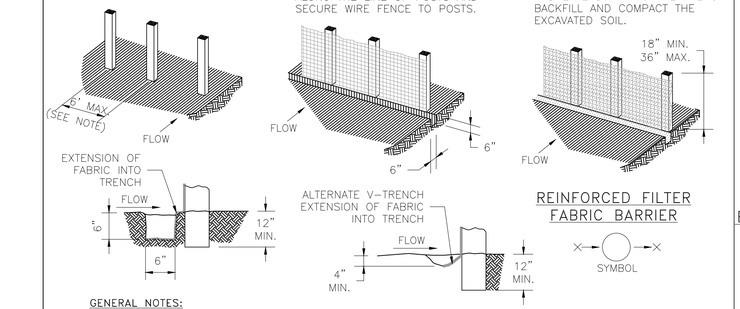
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VERT: 1"=2'

SHEET NO. 89 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Ladbrook Gravity Line P&P\000 Y-204.dwg

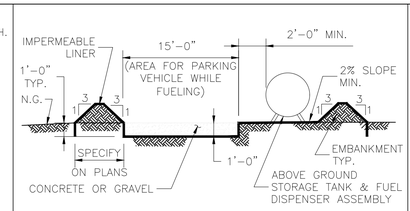


REINFORCED FILTER FABRIC BARRIER

SYMBOL

GENERAL NOTES:

1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.

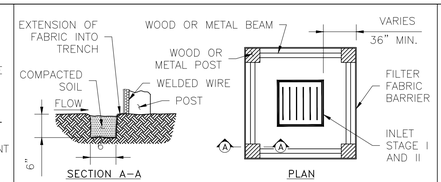


ABOVE GROUND TEMP. VEHICLE & EQUIPMENT FUELING AREA WITH TANK

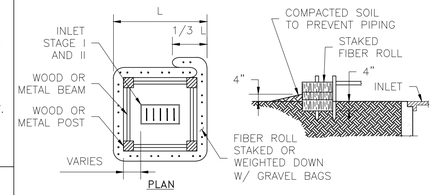
TFA SYMBOL

GENERAL NOTES:

1. THE SIZE OF TANK FOUNDATION AREA DEPENDS ON THE SIZE OF ABOVE GROUND STORAGE TANK AND DISPENSER ASSEMBLY.
2. PROVIDE A MINIMUM SLOPE OF 2 % TOWARD THE SUMP PIT.
3. INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS.



INLET PROTECTION BARRIER WITH REINFORCED FILTER FABRIC



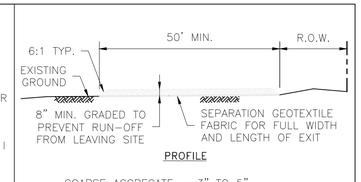
INLET PROTECTION BARRIER WITH FILTER ROLLS

GENERAL NOTES:

1. FIBER ROLLS WILL BE UTILIZED ONLY WHEN SITE CONDITIONS DO NOT PERMIT THE USE OF FILTER FABRIC BARRIER, AND AS APPROVED BY THE ENGINEER.

INLET PROTECTION BARRIERS FOR STAGE I INLETS

IPB SYMBOL

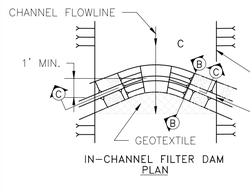


STABILIZED CONSTRUCTION ACCESS

SC-1 SYMBOL

GENERAL NOTES:

1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
7. MINIMUM 14' WIDTH FOR ONE WAY TRAFFIC AND 20' WIDTH FOR TWO WAY TRAFFIC.



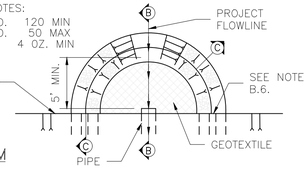
GEOTEXTILE NOTES:

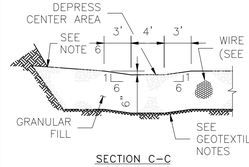
MIN. AOS	SIEVE NO.	120 MIN
MAX. AOS	SIEVE NO.	50 MAX
WEIGHT	OZ/SY	4 OZ. MIN

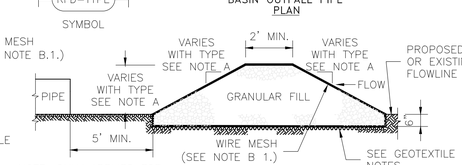


FILTER DAM

RFD-TYPE SYMBOL







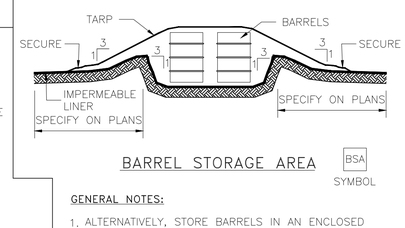
NOTE: ONLY APPLIES FOR DETENTION BASIN OUTFALL PIPE PROTECTION.

A. TYPES OF FILTER DAMS

1. TYPE 1 (NON-REINFORCED)
   a. HEIGHT - 18-24 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM)
   c. SLOPES - 2:1 (MAXIMUM).
2. TYPE 2 (REINFORCED).
   a. HEIGHT - 18-36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
   c. SLOPES - 2:1 (MAXIMUM).
3. TYPE 3 (REINFORCED)
   a. HEIGHT - 36-48 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
   c. SLOPES - 3:1 (MAXIMUM).
4. TYPE 4 (GABION)
   a. HEIGHT - 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
5. TYPE 5. AS SHOWN ON THE PLANS.

B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.

1. TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
2. PLACE GRANULAR FILL ON THE WIRE MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
   a. 3-5 INCHES FOR ROCK FILTER DAM TYPES 1, 2 AND 4.
   b. 4-8 INCHES FOR ROCK FILTER DAM TYPE REFER TO GRANULAR FILL IN SPECIFICATION SECTION No. 02378 RIPRAP AND GRANULAR FILL.
3. FOLD WIRE MESH AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
4. IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
5. SEE HCFCD SPECIFICATION SECTION NO. 02364-FILTER DAMS.
6. EMBED ONE FOOT MINIMUM INTO SLOPE AND RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA AT SLOPE.

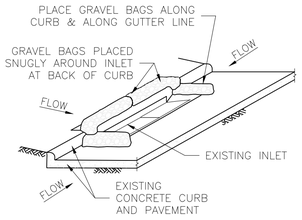


BARREL STORAGE AREA

BSA SYMBOL

GENERAL NOTES:

1. ALTERNATIVELY, STORE BARRELS IN AN ENCLOSED BUILDING OR SHED.
2. INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS. 60 mil MINIMUM.
3. CONSTRUCT BERMED AREA WITH VOLUME GREATER THAN OR EQUAL TO 110% VOLUME OF BARRELS.

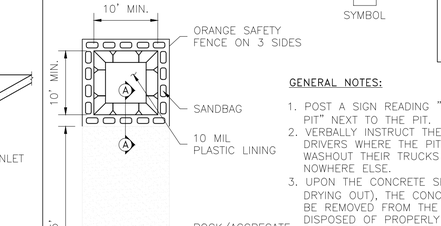


INLET PROTECTION BARRIERS FOR STAGE II INLETS

IPB-II SYMBOL

GENERAL NOTES:

1. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.
2. GRAVEL BAGS SHALL NOT BLOCK THROAT OF INLET UNLESS DIRECTED BY ENGINEER.

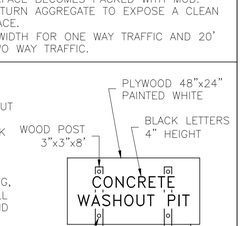


CONCRETE TRUCK WASHOUT AREA

CTW SYMBOL

GENERAL NOTES:

1. POST A SIGN READING "CONCRETE WASHOUT PIT" NEXT TO THE PIT.
2. VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASHOUT THEIR TRUCKS IN THE PIT AND NOWHERE ELSE.
3. UPON THE CONCRETE SETTING UP (CURING, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR. AFTER REMOVAL OF THE CONCRETE WASTE, THE WASHOUT PIT SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN-SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
4. CONCRETE WASHOUT PITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SWALE, DITCH, OR WATERWAY.
5. CONSTRUCT ENTRY ROAD AND BOTTOM OF WASHOUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS EQUIPMENT.



NOTES:

1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.
2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.
3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.
4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.
5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.
7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

NO.	REVISIONS	DATE	NAME
1	UPDATED DEPARTMENT NAME	2/17/15	RS
2			
3			
4			
5			

HARRIS COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE:

DRAWN BY: JDZ		HCED STANDARD
CK'D BY: NR	SHEET DESCRIPTION: STORM WATER POLLUTION	29
SCALE: NONE	PREVENTION PLAN DETAILS	SHEET NO: /
DATE:	APPROVED BY:	

0 50' 100'
1"=50'

NO.	DATE	REVISION	APP.

PLOTTED: 8/21/2025 4:44 PM PEN TABLE: ----

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Craig Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

STORM WATER POLLUTION PREVENTION PLAN DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-205

HORIZ: 1"=50'
VERT: NONE

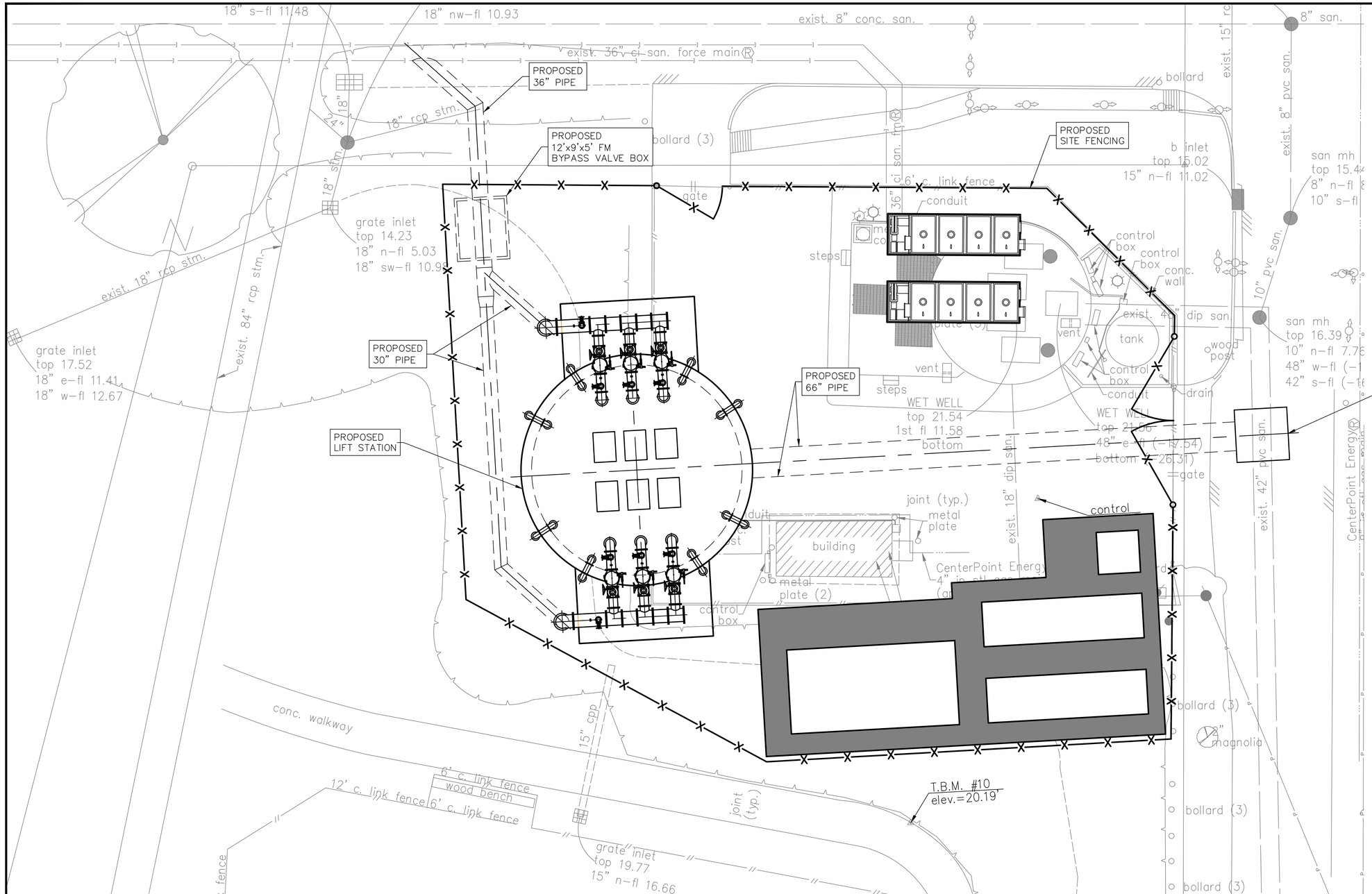
SHEET NO. 90 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\Ladbrook Gravity Line P&P\000 Y-205.dwg

g:\1110\5431-01_coh lift station\ladbrook gravity line p&p\000 y-205.dwg



NO.	DATE	REVISION	APP.

PLOTTED: 8/21/2025 4:23 PM PEN TABLE: ----

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

MAGNOLIA PARK LIFT STATION
PROPOSED
YARD PIPING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-301

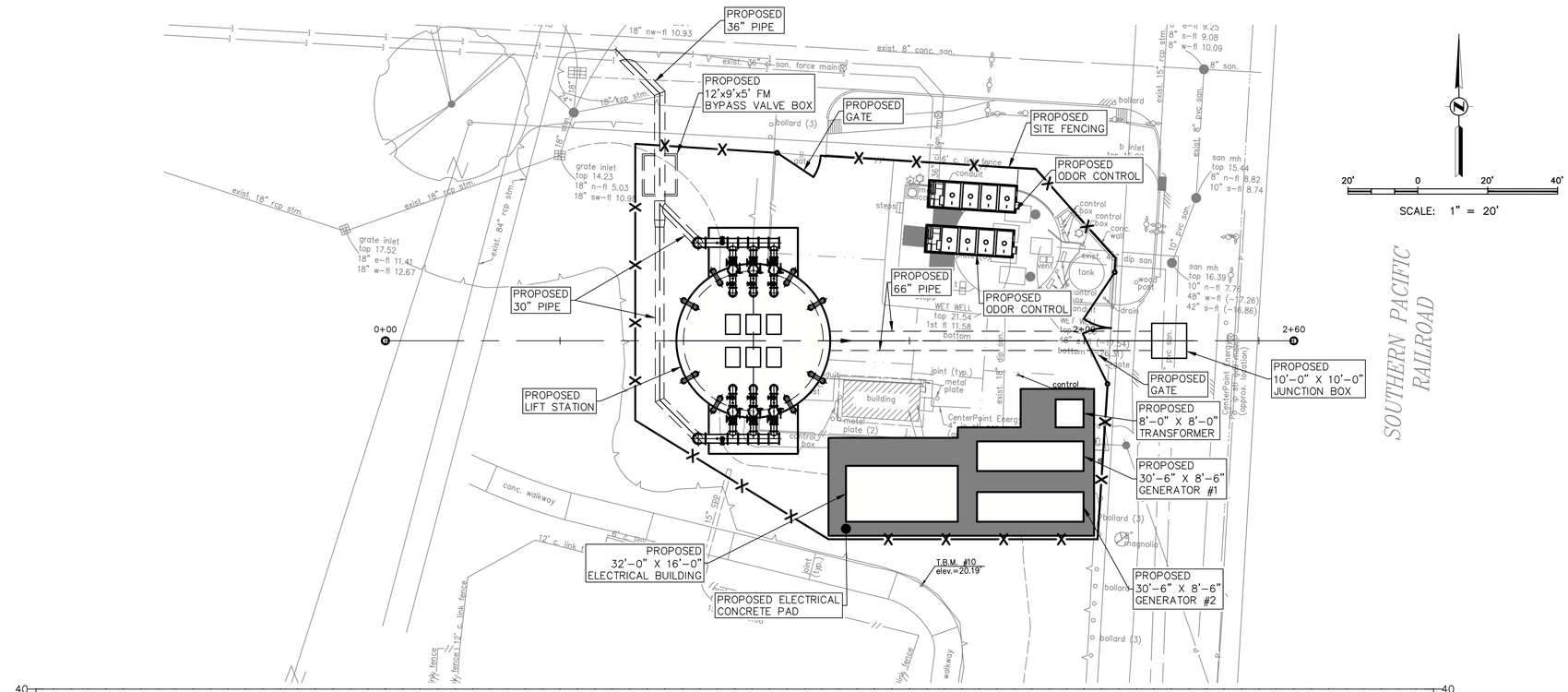
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VERT: NONE

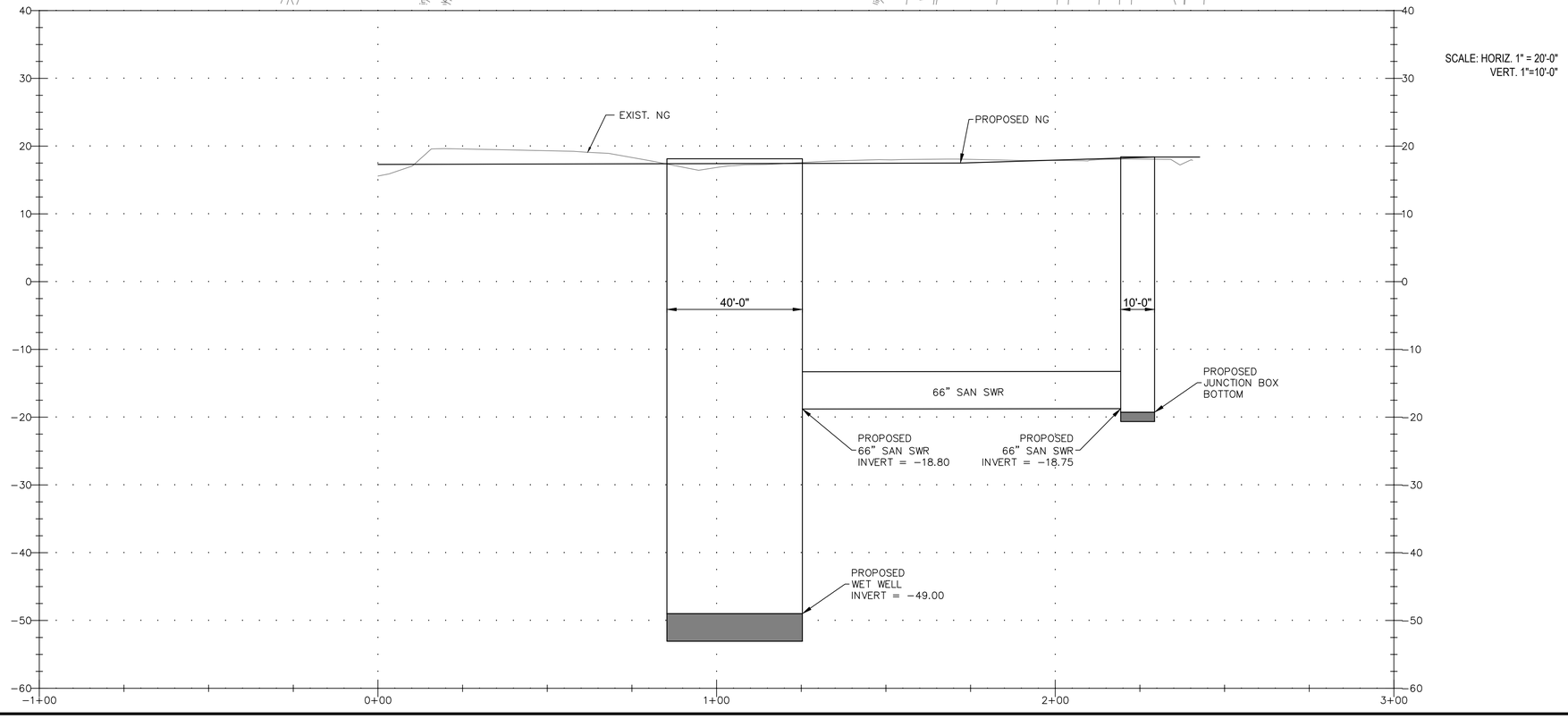
SHEET NO. 91 OF 225

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Magnolia Park\000 Y-301.dwg





SCALE: HORIZ. 1" = 20'-0"
VERT. 1"=10'-0"

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 4:24 PM

GANNETT FLEMING

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AUGUST 22, 2025

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

MAGNOLIA PARK LIFT STATION
PROPOSED
66" INFLUENT LINE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

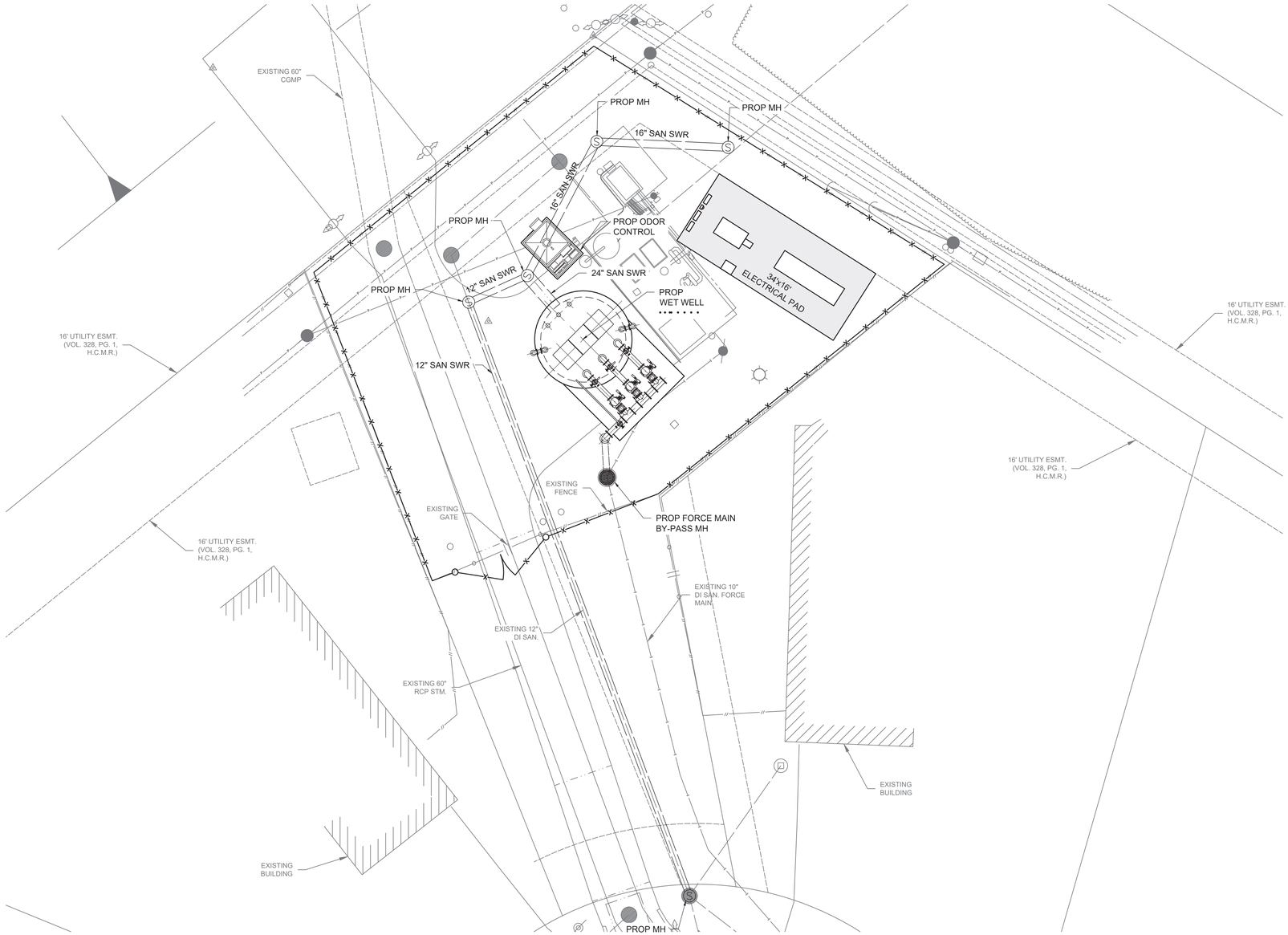
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-302	HORIZ: 1"=20' VERT: 1"=10'
SHEET NO. 92 OF 225	DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Magnolia Park\000 Y-302.dwg



0 10' 20'

1"=10'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 4:33 PM

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Engineer
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Registration Number
AUGUST 22, 2025
Date
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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

PINE PRAIRIE LIFT STATION
PROPOSED
YARD PIPING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-401

HORIZ: 1"=10'

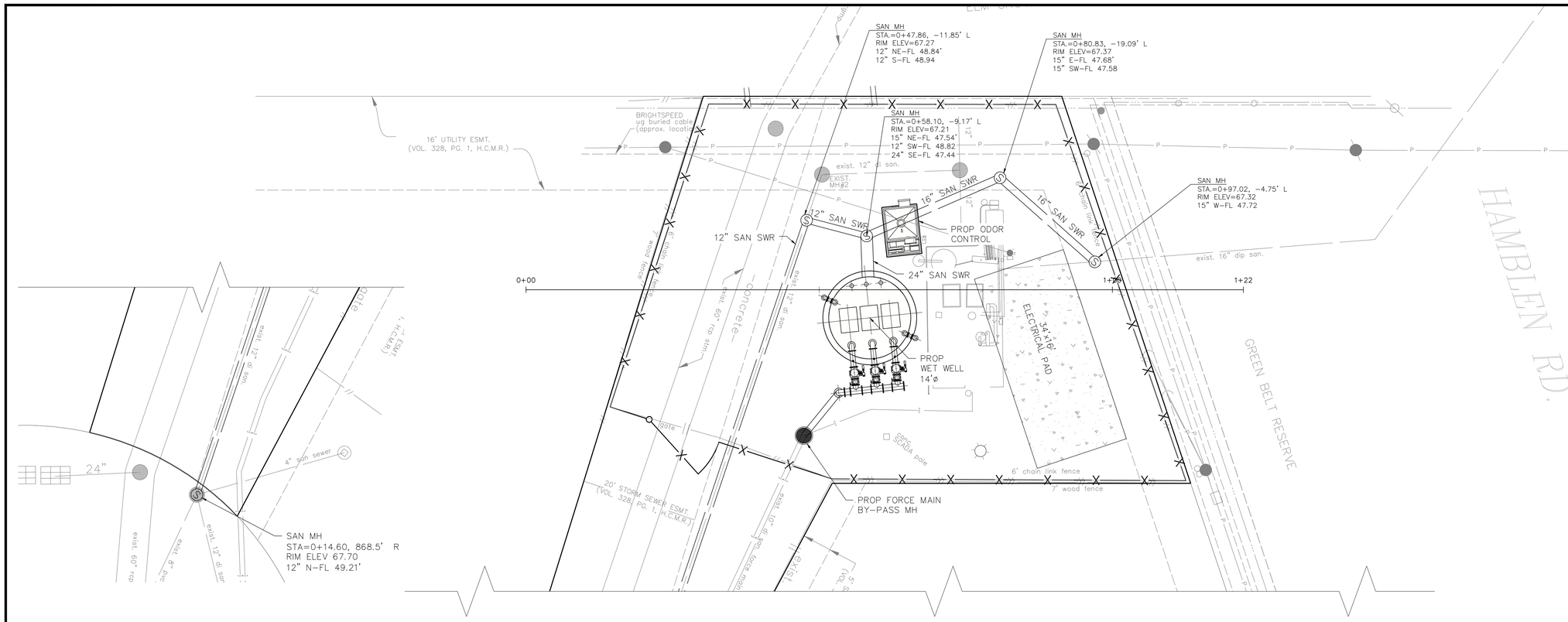
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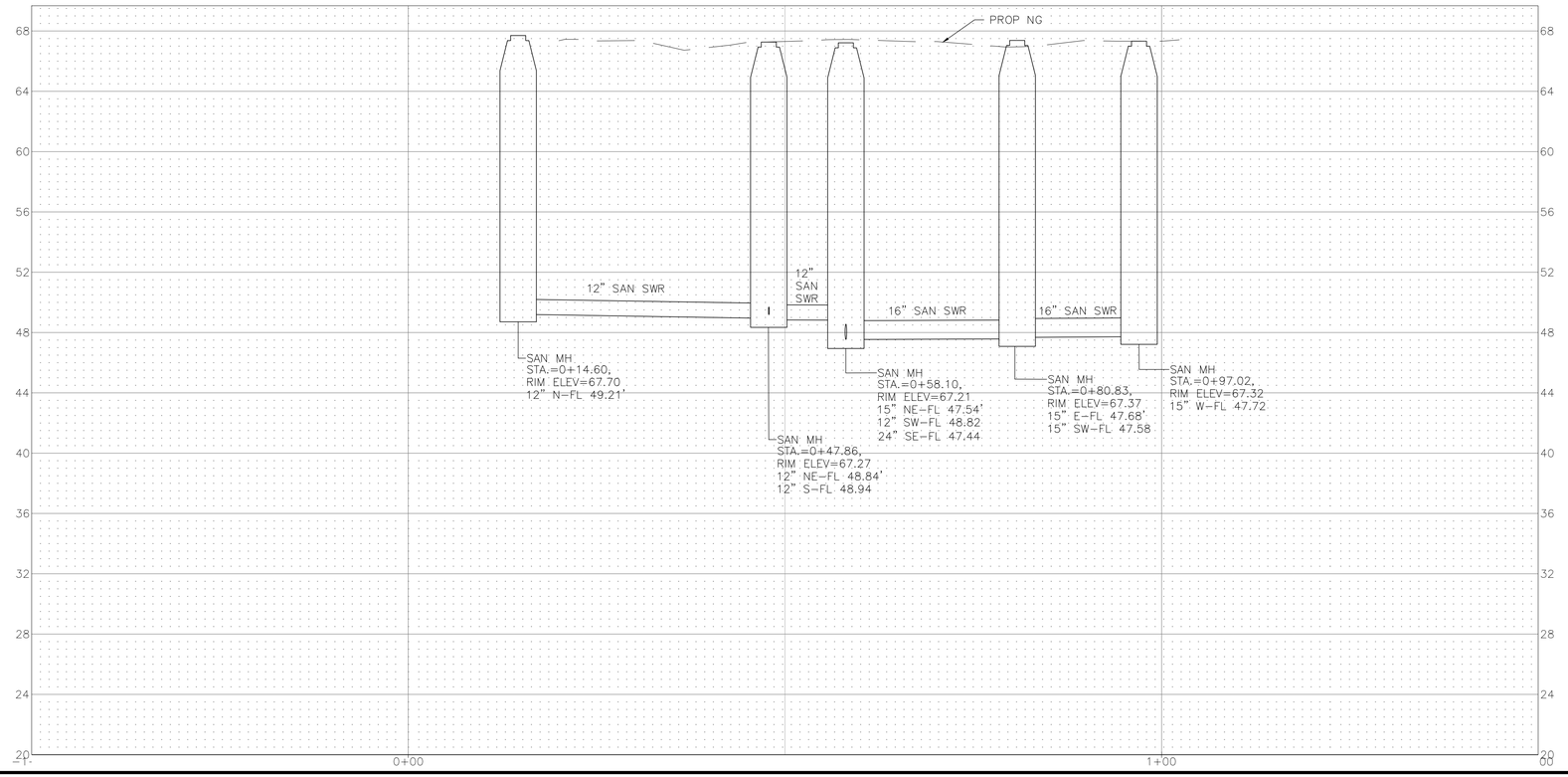
SHEET NO. 93 OF 225

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Pine Prairie\000 Y-401.dwg





SCALE: HORIZ. 1" = 10'-0"
VERT. 1"=5'-0"

NO.	DATE	REVISION	APP.

PLOTTED: 8/21/2025 4:34 PM PEN TABLE: ----

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Date
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

PINE PRAIRIE LIFT STATION
PROPOSED
SANITARY SEWER

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-402

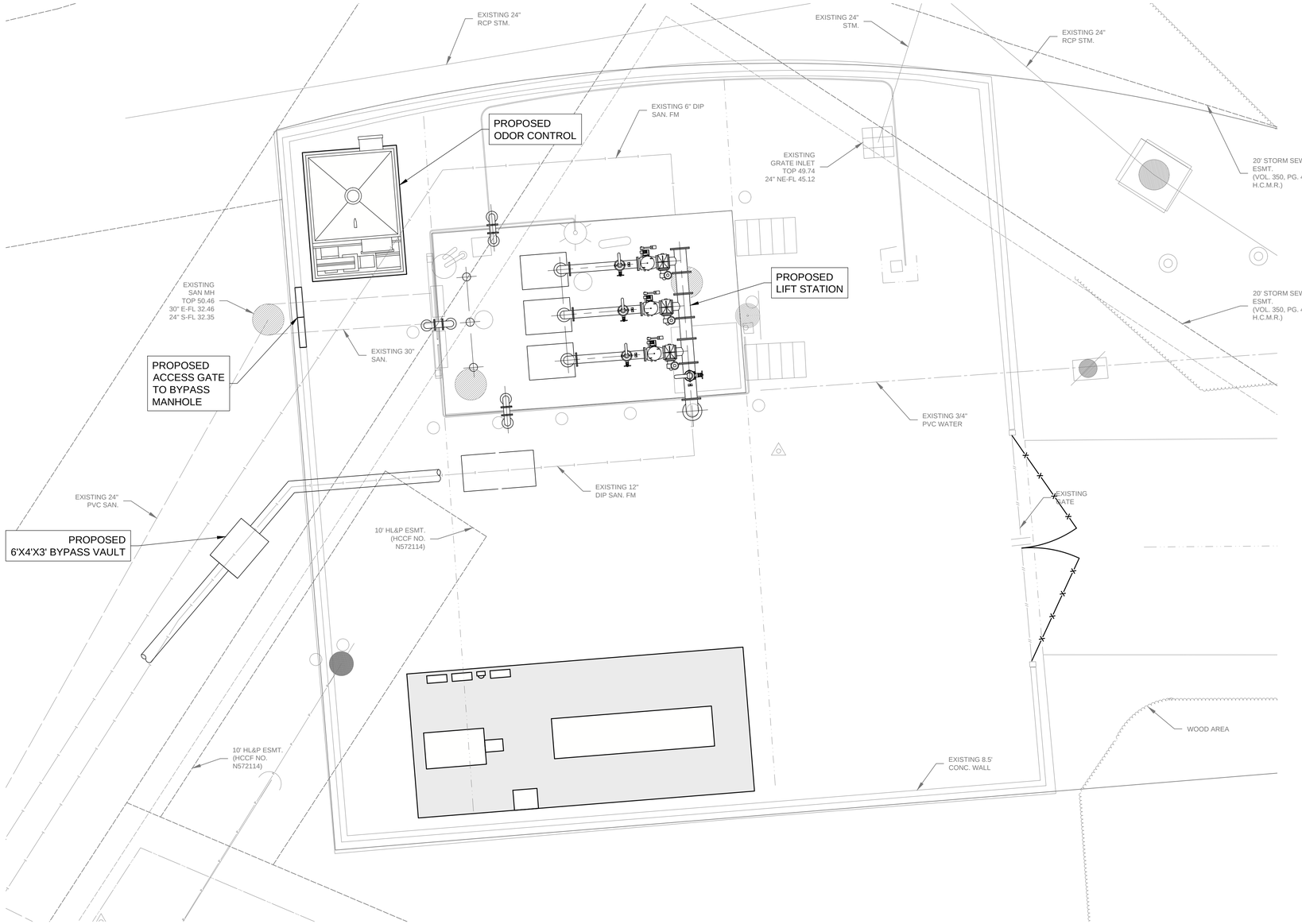
HORIZ: 1"=10'
VERT: 1"=5'

SHEET NO. 94 OF 225

DRAWING SCALE

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FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Pine Prarie\000 Y-402.dwg



0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 5:25 PM

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Crag Alexander Perry
Registered Professional Engineer
116345
License Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

YARD PIPING

STATELY OAKS LIFT STATION
PROPOSED
YARD PIPING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. Y-501

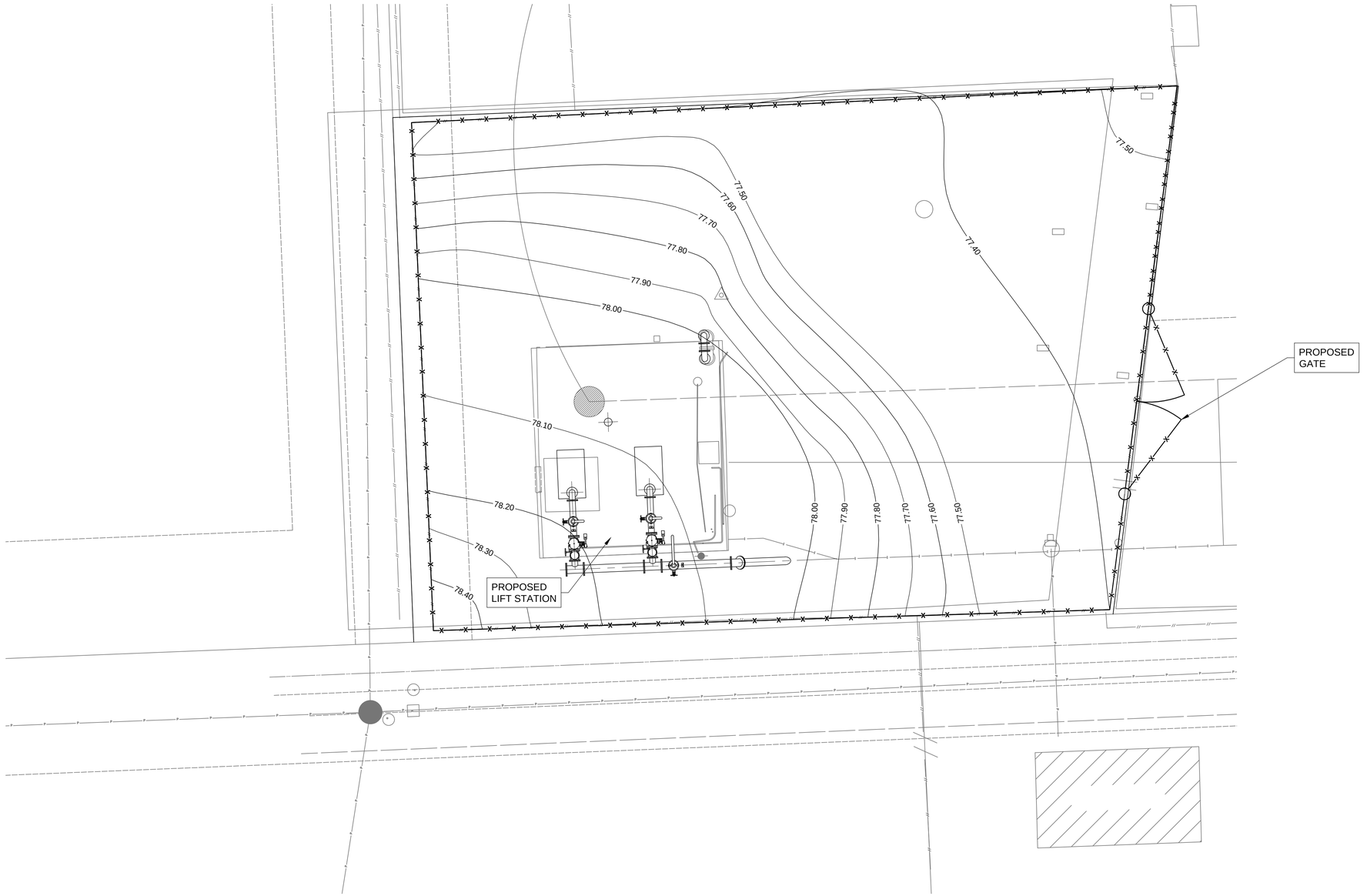
HORIZ: 1"=5'
VERT: NONE

SHEET NO. 95 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Stately Oaks\000 Y-501.dwg



0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 4:25 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

Not to be used for construction, bidding, permit or regulatory approval purposes.This document is released for the purpose of interim review under the authority of:

Craig Alexander Perry
Engineer

116345
Registration Number

AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

CHESTNUT RIDGE LIFT STATION
PROPOSED
GRADING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-101

HORIZ: 1"=5'

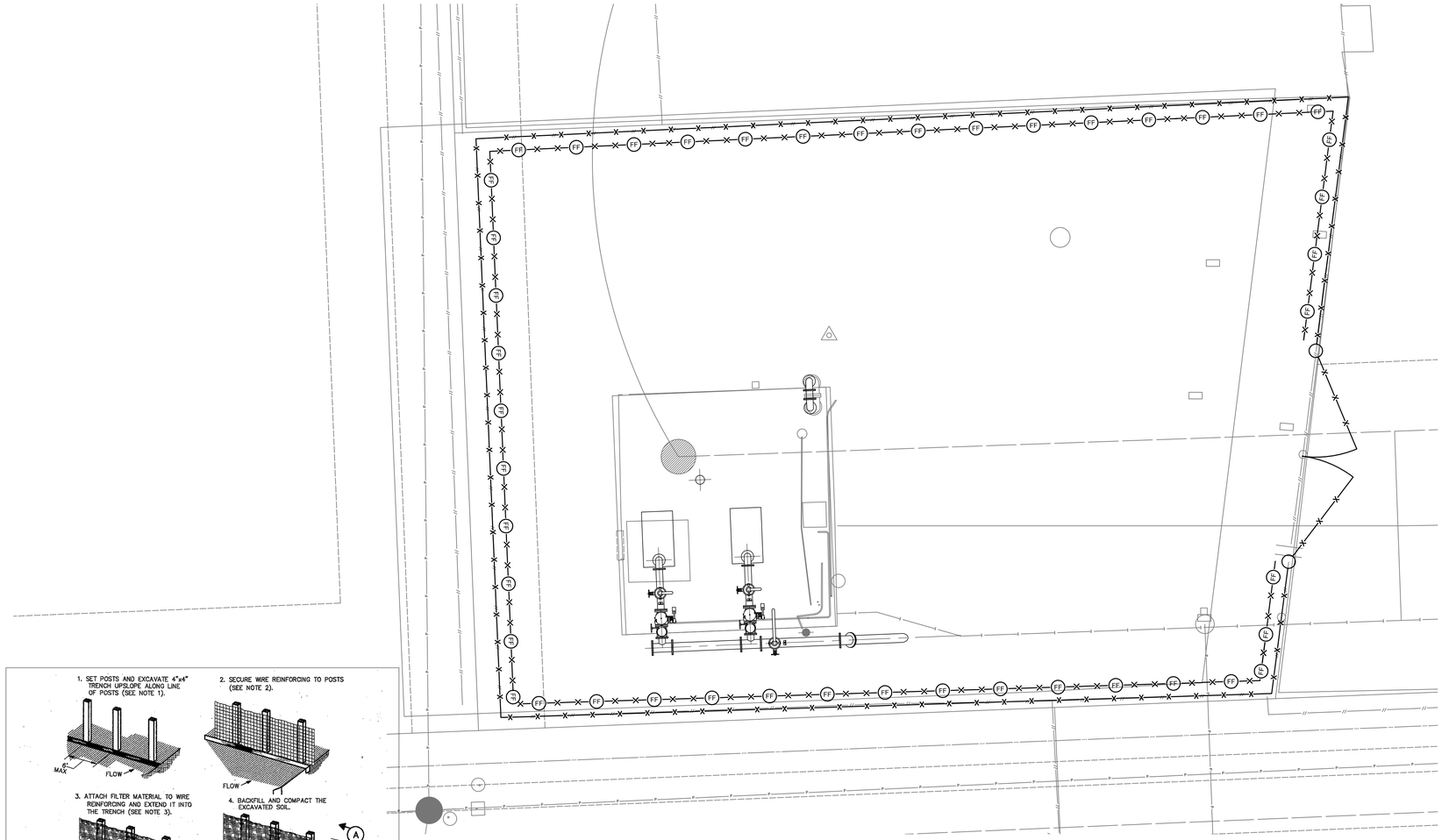
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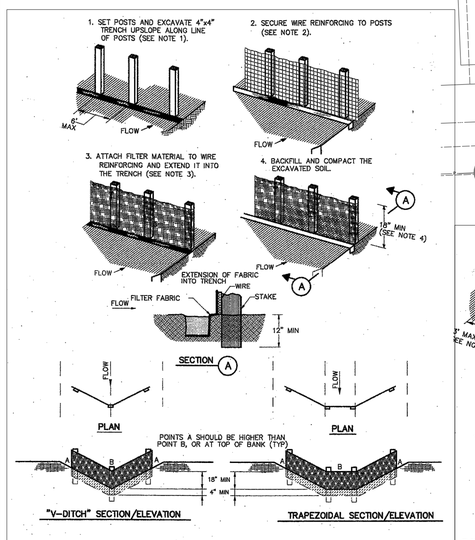
SHEET NO. 96 OF 225

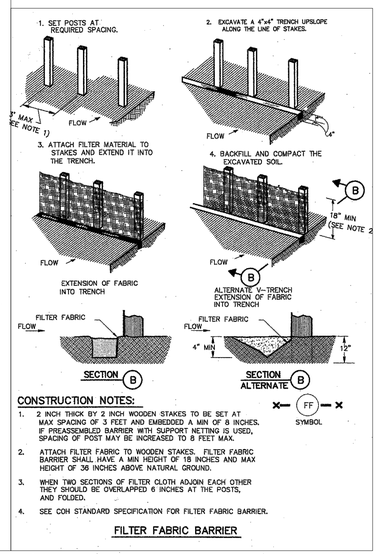
DRAWING SCALE

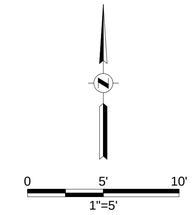
FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Chestnut Ridge\000 D-101.dwg









NOTES:
1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.

2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.

3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.

4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.

5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.

7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 4:26 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9070

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Craig Alexander Perry
Name
116345
License Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

CHESTNUT RIDGE LIFT STATION
PROPOSED
STORM WATER POLLUTION
PREVENTION PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-102

HORIZ: 1"=5'

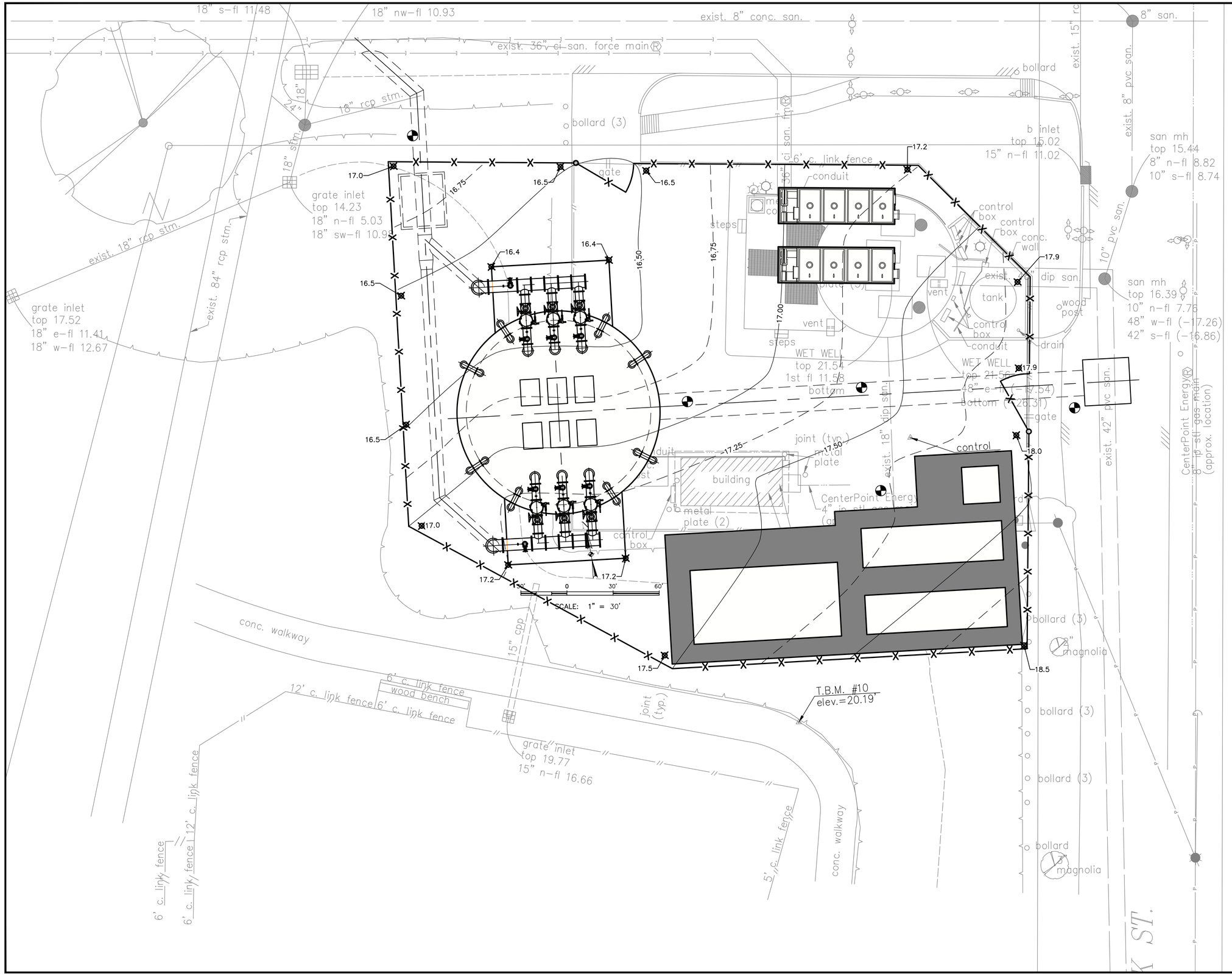
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SHEET NO. 97 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Chestnut Ridge\000 D-102.dwg



10' 0 10' 20'

SCALE: 1" = 10'

NO.	DATE	REVISION	APP.

PLOTTED: 8/21/2025 3:46 PM PEN TABLE: ----

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-9570

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116345
AUGUST 22, 2025

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

MAGNOLIA PARK LIFT STATION
PROPOSED
GRADING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-301

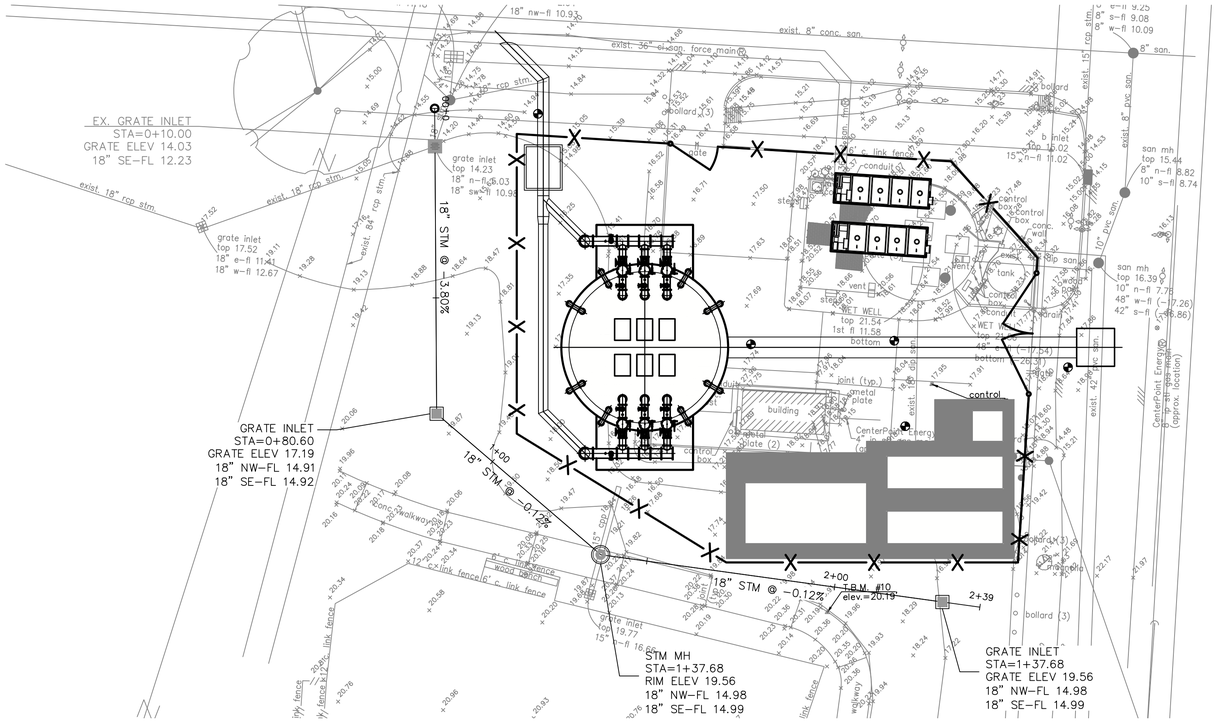
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VERT: NONE

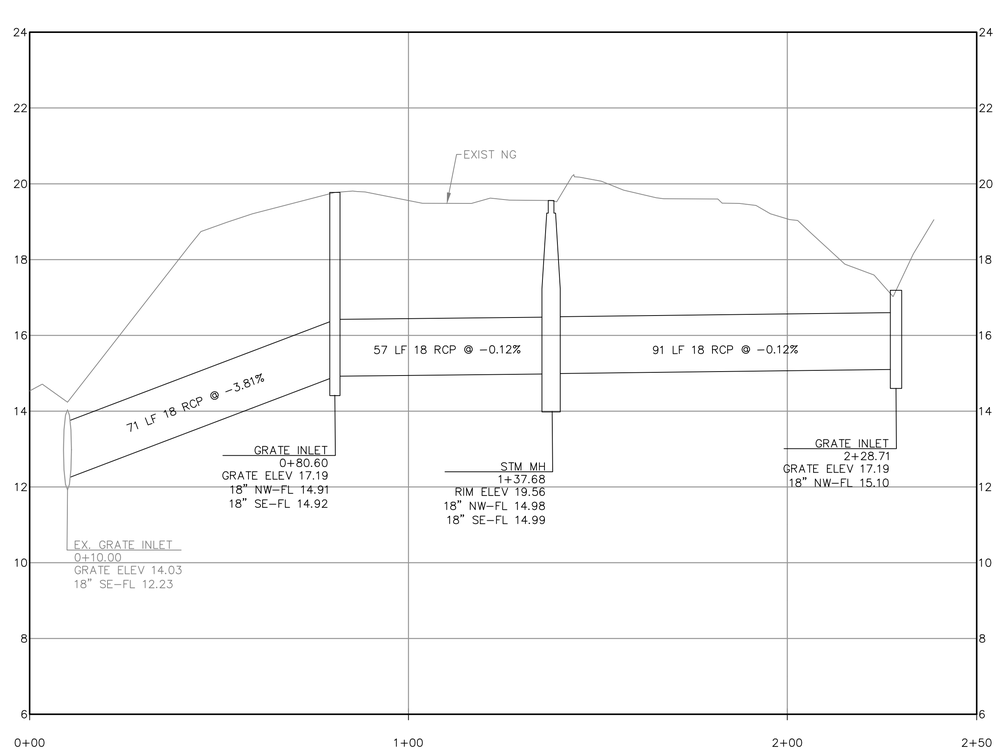
SHEET NO. 98 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Magnolia Park\000 D-301.dwg





SCALE: HORIZ. 1" = 20'-0"
VERT. 1"=10'-0"

NO.	DATE	REVISION	APP.

PLOTTED: 8/21/2025 3:40 PM PEN TABLE: ----

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Craig Alexander Perry
116345
AUGUST 22, 2025

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

MAGNOLIA PARK LIFT STATION
PROPOSED
18" STORM SEWER LINE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-302

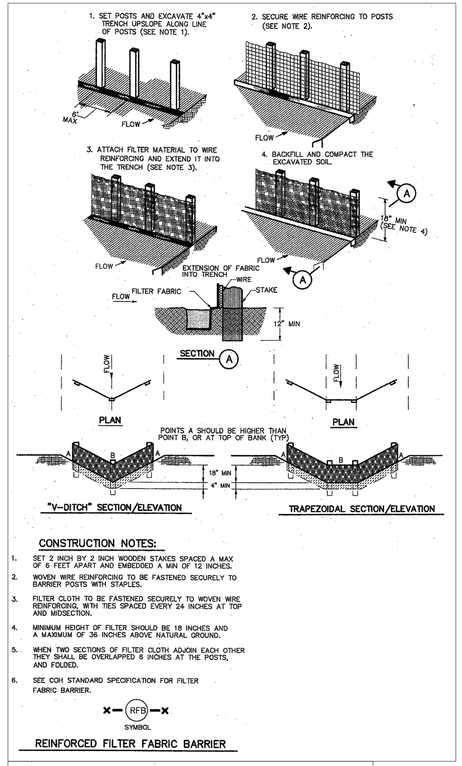
HORIZ: 1"=20'
VERT: 1"=10'

SHEET NO. 99 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Magnolia Park\000 D-302.dwg

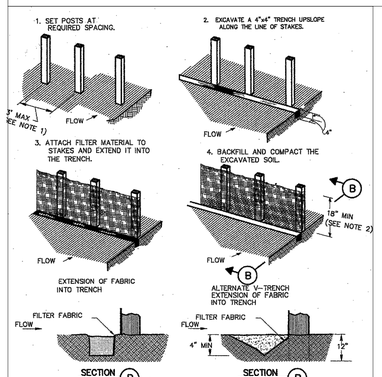


CONSTRUCTION NOTES:

1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

SYMBOL

REINFORCED FILTER FABRIC BARRIER

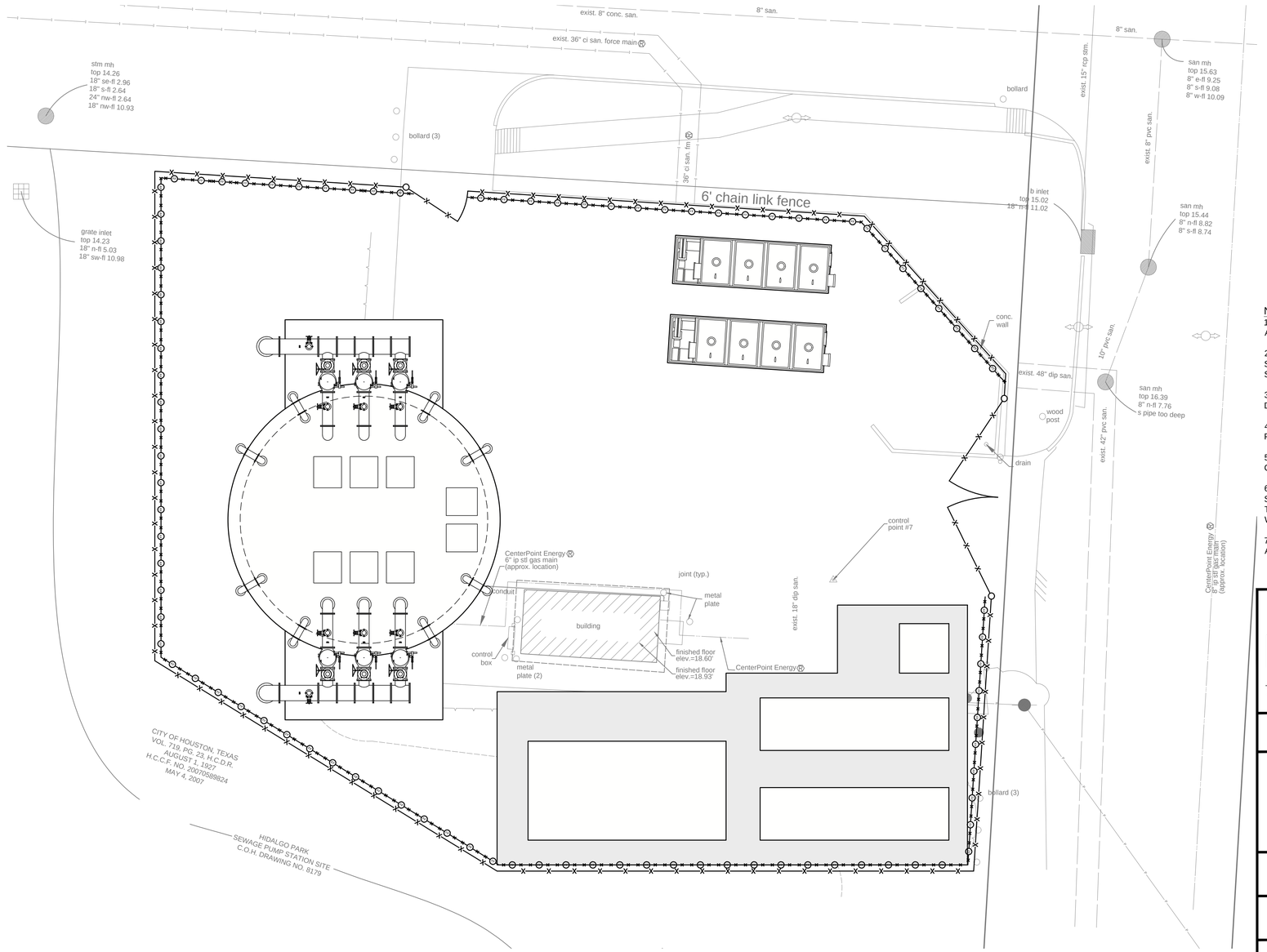


CONSTRUCTION NOTES:

1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

SYMBOL

FILTER FABRIC BARRIER



0 10' 20'
1"=10'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 4:22 PM

NOTES:

1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.
2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.
3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.
4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.
5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.
7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

GANNETT FLEMING
T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Crag Alexander Perry
Engineer
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

MAGNOLIA PARK LIFT STATION PROPOSED STORM WATER POLLUTION PREVENTION PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-303

HORIZ: 1"=10'

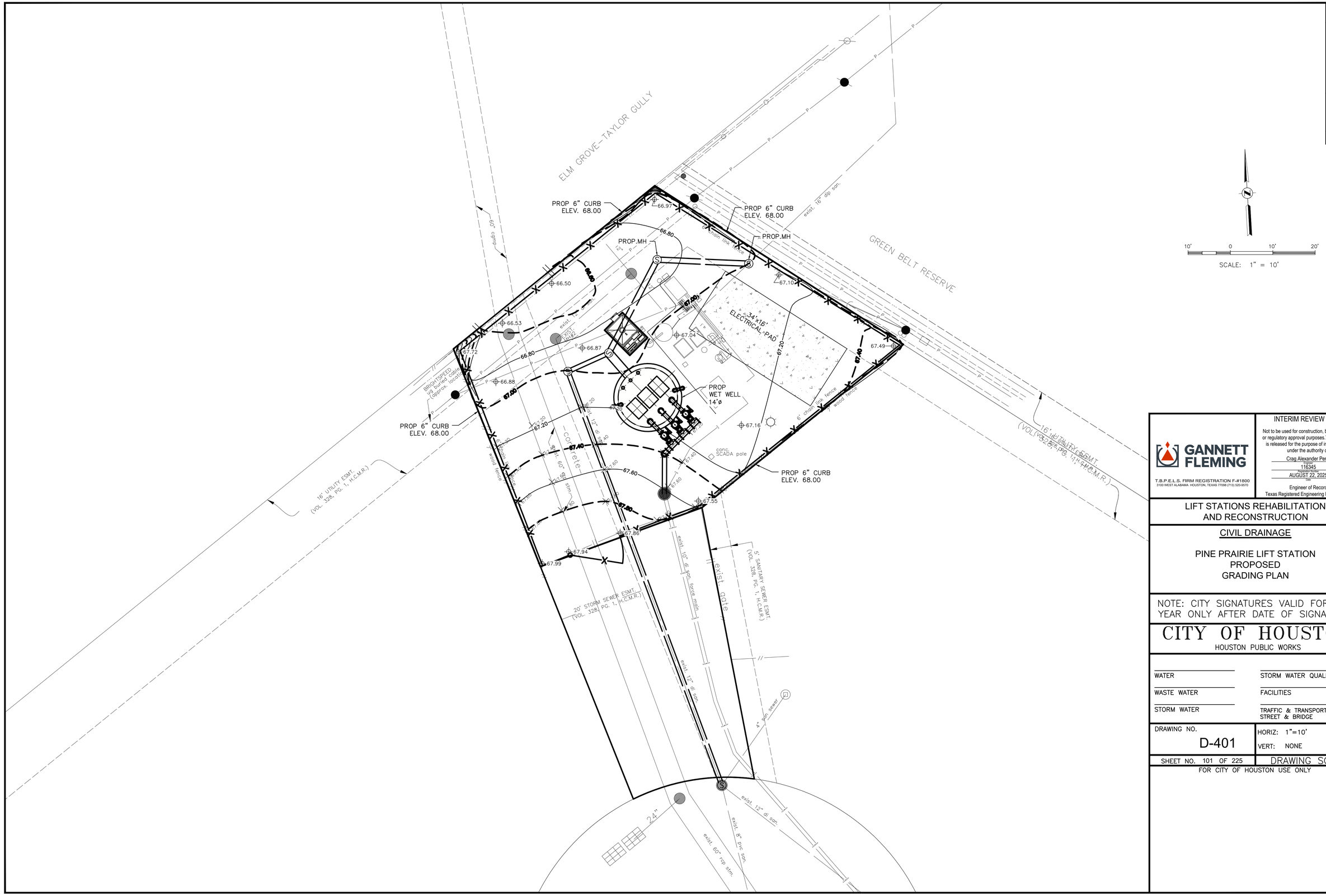
VERT: NONE

SHEET NO. 100 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Magnolia Park\000 D-303.dwg



NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 4:31 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Craig Alexander Perry

116345
Registration Number

AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

PINE PRAIRIE LIFT STATION
PROPOSED
GRADING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

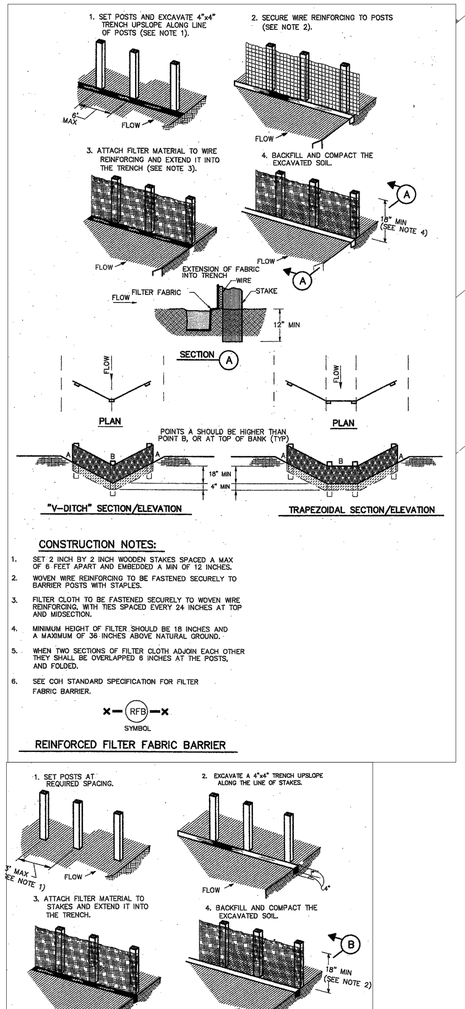
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-401	HORIZ: 1"=10' VERT: NONE
SHEET NO. 101 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\54431-01_COH LIft Station\PER\Pine Prarie\000 D-401.dwg

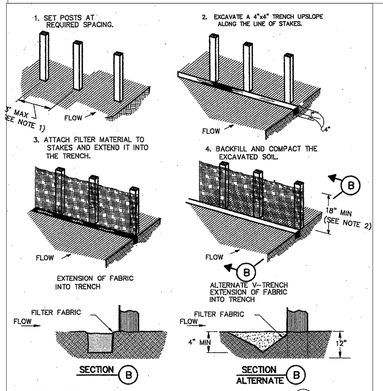


CONSTRUCTION NOTES:

1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING. WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

SYMBOL

REINFORCED FILTER FABRIC BARRIER

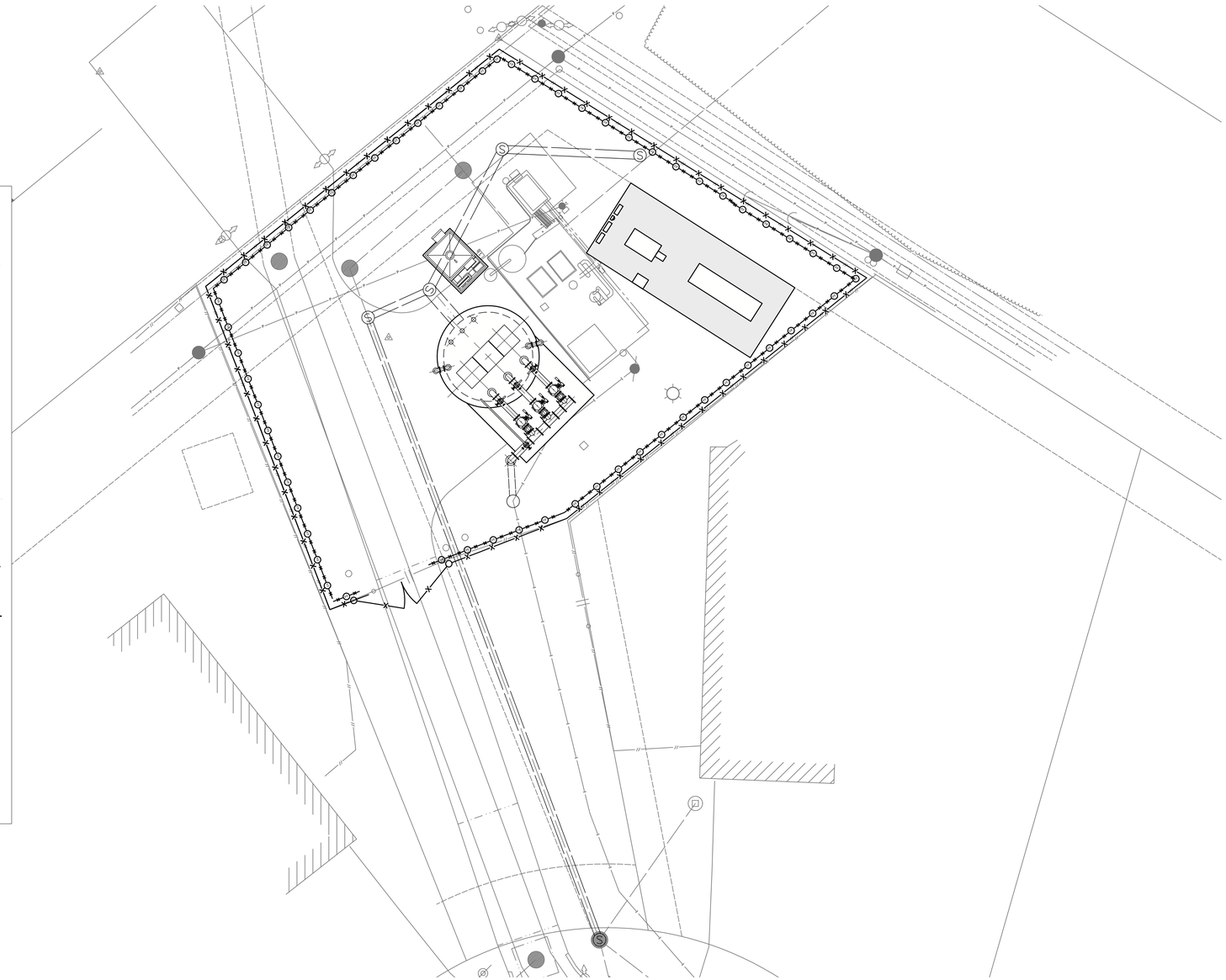


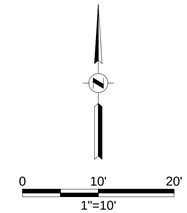
CONSTRUCTION NOTES:

1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

SYMBOL

FILTER FABRIC BARRIER





NOTES:
1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.

2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.

3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.

4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.

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6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.

7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 4:32 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Crag Alexander Perry
116345
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

PINE PRAIRIE LIFT STATION
PROPOSED
STORM WATER POLLUTION
PREVENTION PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-402

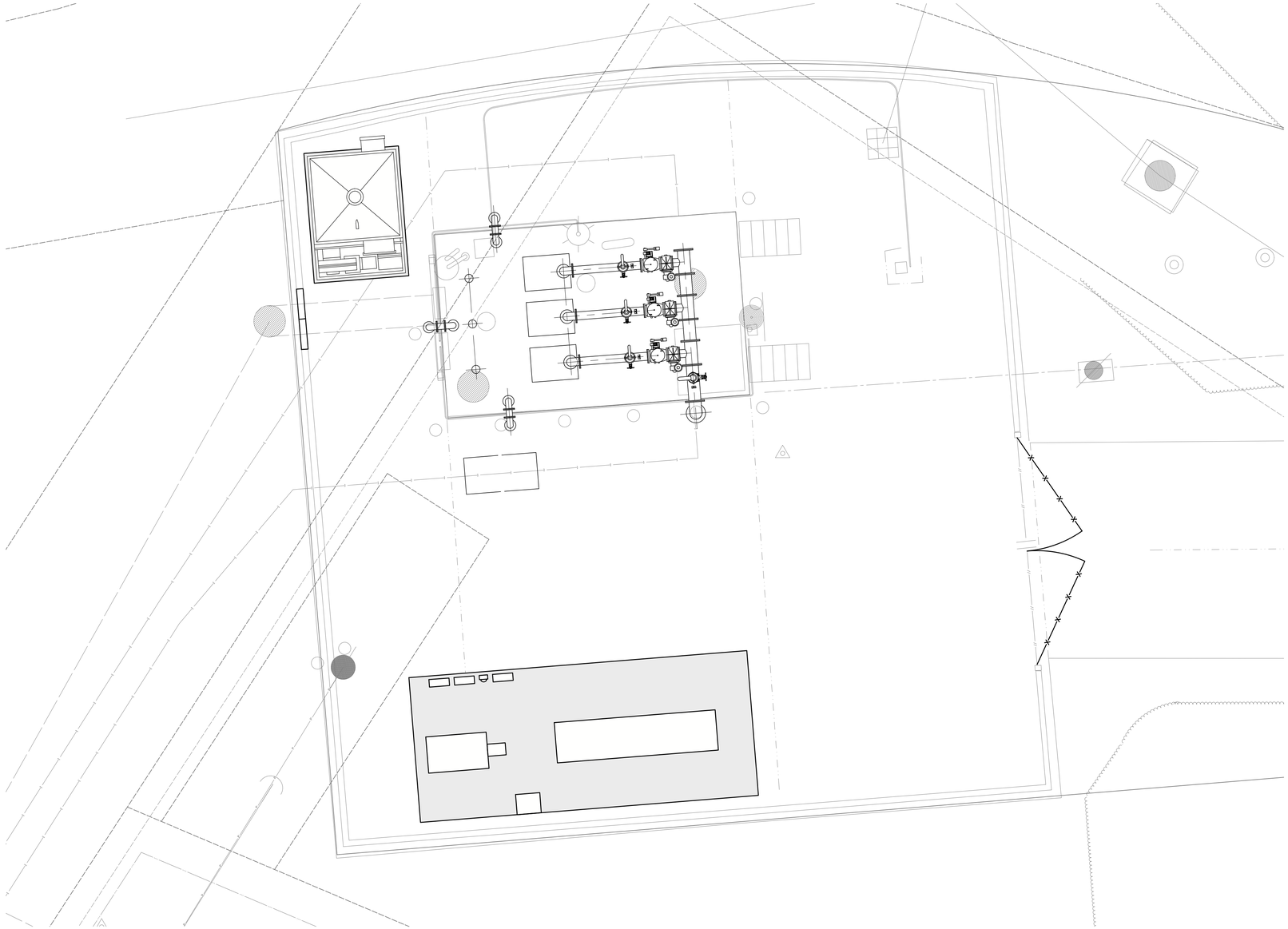
HORIZ: 1"=10'
VERT: NONE

SHEET NO. 102 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Pine Prarie\000 D-402.dwg



0 5' 10'
1"=5'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 4:35 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

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Name
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License No.
AUGUST 22, 2025
Date

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Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

STATELY OAKS LIFT STATION
PROPOSED
GRADING PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO.
D-501

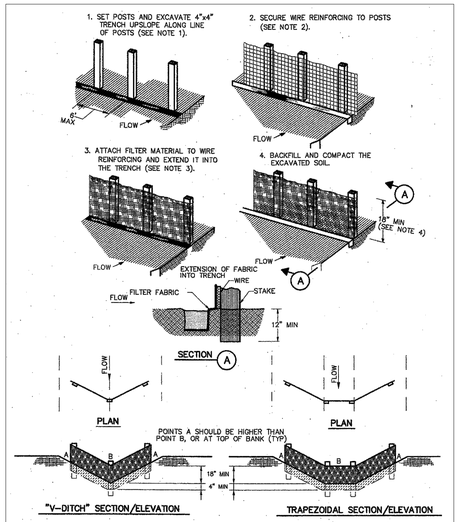
HORIZ: 1"=5'
VERT: NONE

SHEET NO. 103 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Stately Oaks\000 D-501.dwg

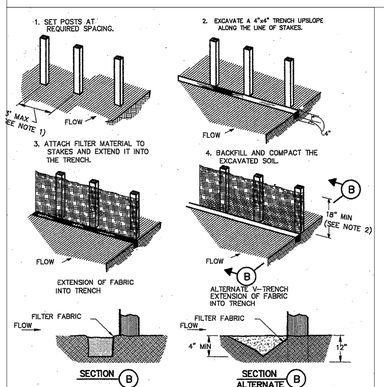


CONSTRUCTION NOTES:

1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE REINFORCING TO BE FASTENED SECURELY TO BARRIER POSTS WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE REINFORCING, WITH TIES SPACED EVERY 24 INCHES AT TOP AND MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
6. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

RFB
SYMBOL

REINFORCED FILTER FABRIC BARRIER

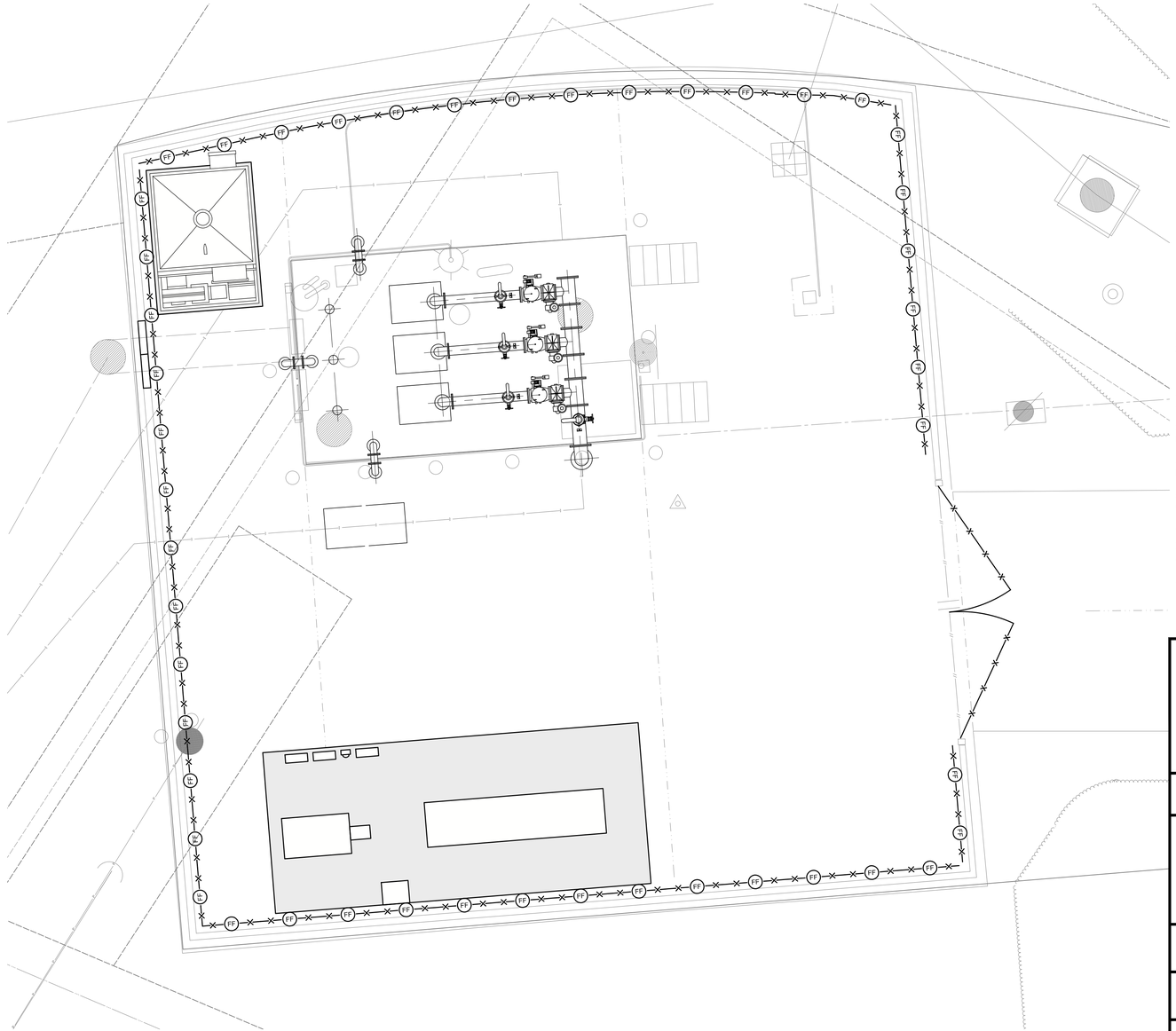


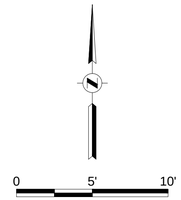
CONSTRUCTION NOTES:

1. 2 INCH THICK BY 2 INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN OF 8 INCHES. IF PREASSEMBLED BARRIER WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC BARRIER SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS, AND FOLDED.
4. SEE COH STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

FF
SYMBOL

FILTER FABRIC BARRIER





NOTES:
1. STORM WATER POLLUTION PREVENTION PLAN SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.

2. CONTRACTOR IS RESPONSIBLE FOR MODIFICATIONS TO SWPPP AS NECESSARY TO REDUCE AND/OR ELIMINATE SEDIMENT FROM ENTERING DRAINAGE SYSTEMS.

3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.

4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.

5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.

7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

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GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA, HOUSTON, TEXAS 77098 (713) 520-9070

INTERIM REVIEW ONLY

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Craig Alexander Perry
Engineer
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

STATELY OAKS LIFT STATION
PROPOSED
STORM WATER POLLUTION PREVENTION PLAN AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-502

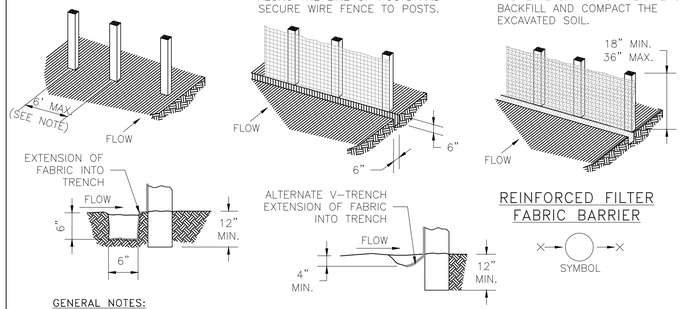
HORIZ: 1"=5'
VERT: NONE

SHEET NO. 104 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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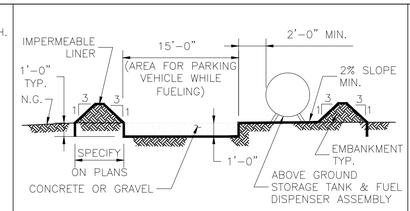


REINFORCED FILTER FABRIC BARRIER

SYMBOL

GENERAL NOTES:

1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.

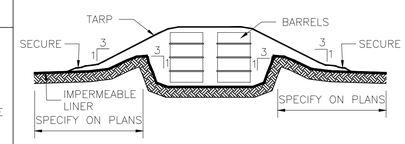


ABOVE GROUND TEMP. VEHICLE & EQUIPMENT FUELING AREA WITH TANK

TFA SYMBOL

GENERAL NOTES:

1. THE SIZE OF TANK FOUNDATION AREA DEPENDS ON THE SIZE OF ABOVE GROUND STORAGE TANK AND DISPENSER ASSEMBLY.
2. PROVIDE A MINIMUM SLOPE OF 2 % TOWARD THE SUMP PIT.
3. INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS.

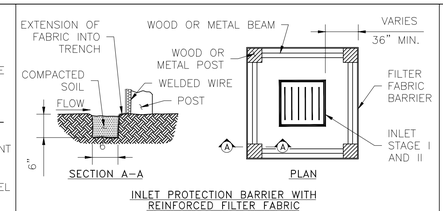


BARREL STORAGE AREA

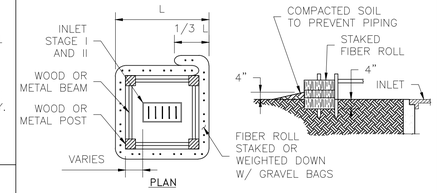
BSA SYMBOL

GENERAL NOTES:

1. ALTERNATIVELY, STORE BARRELS IN AN ENCLOSED BUILDING OR SHED.
2. INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS. 60 mil MINIMUM.
3. CONSTRUCT BERMED AREA WITH VOLUME GREATER THAN OR EQUAL TO 110% VOLUME OF BARRELS.



INLET PROTECTION BARRIER WITH REINFORCED FILTER FABRIC



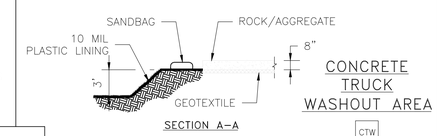
INLET PROTECTION BARRIER WITH FILTER ROLLS

GENERAL NOTES:

1. FIBER ROLLS WILL BE UTILIZED ONLY WHEN SITE CONDITIONS DO NOT PERMIT THE USE OF FILTER FABRIC BARRIER, AND AS APPROVED BY THE ENGINEER.

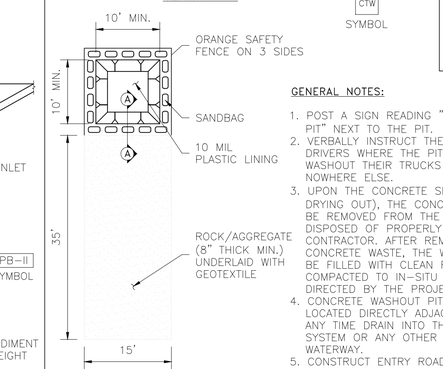
INLET PROTECTION BARRIERS FOR STAGE I INLETS

IPB SYMBOL



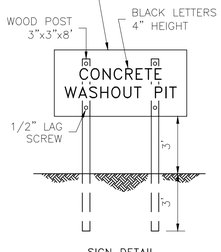
CONCRETE TRUCK WASHOUT AREA

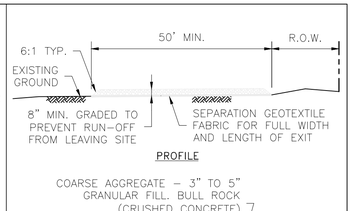
CTW SYMBOL



GENERAL NOTES:

1. POST A SIGN READING "CONCRETE WASHOUT PIT" NEXT TO THE PIT.
2. VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASHOUT THEIR TRUCKS IN THE PIT AND NOWHERE ELSE.
3. UPON THE CONCRETE SETTING UP (CURING, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR. AFTER REMOVAL OF THE CONCRETE WASTE, THE WASHOUT PIT SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN-SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
4. CONCRETE WASHOUT PITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SWALE, DITCH, OR WATERWAY.
5. CONSTRUCT ENTRY ROAD AND BOTTOM OF WASHOUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS EQUIPMENT.



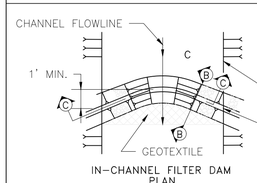


STABILIZED CONSTRUCTION ACCESS

SC-1 SYMBOL

GENERAL NOTES:

1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
7. MINIMUM 14' WIDTH FOR ONE WAY TRAFFIC AND 20' WIDTH FOR TWO WAY TRAFFIC.



IN-CHANNEL FILTER DAM PLAN

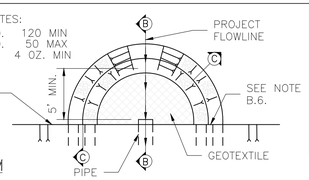
GEOTEXTILE NOTES:

MIN. AOS	SIEVE NO.	120 MIN	
MAX. AOS	SIEVE NO.	50 MAX	
WEIGHT	OZ/SY	4 OZ. MIN	

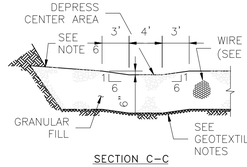
FILTER DAM

RFD-TYPE

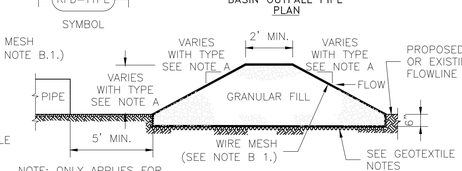
SYMBOL



FILTER DAM AT DETENTION BASIN OUTFALL PIPE PLAN



SECTION C-C



NOTE: ONLY APPLIES FOR DETENTION BASIN OUTFALL PIPE PROTECTION.

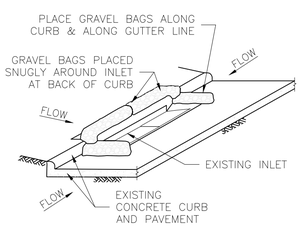
SECTION B-B

A. TYPES OF FILTER DAMS

1. TYPE 1 (NON-REINFORCED)
   a. HEIGHT - 18-24 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM)
   c. SLOPES - 2:1 (MAXIMUM).
2. TYPE 2 (REINFORCED).
   a. HEIGHT - 18-36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
   c. SLOPES - 2:1 (MAXIMUM).
3. TYPE 3 (REINFORCED)
   a. HEIGHT - 36-48 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
   c. SLOPES - 3:1 (MAXIMUM).
4. TYPE 4 (GABION)
   a. HEIGHT - 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   b. TOP WIDTH - 2 FEET (MINIMUM).
5. TYPE 5. AS SHOWN ON THE PLANS.

B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.

1. TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
2. PLACE GRANULAR FILL ON THE WIRE MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
   a. 3-5 INCHES FOR ROCK FILTER DAM TYPES 1, 2 AND 4.
   b. 4-8 INCHES FOR ROCK FILTER DAM TYPE REFER TO GRANULAR FILL IN SPECIFICATION SECTION No. 02378 RIPRAP AND GRANULAR FILL.
3. FOLD WIRE MESH AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
4. IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
5. SEE HCFCD SPECIFICATION SECTION NO. 02364-FILTER DAMS.
6. EMBED ONE FOOT MINIMUM INTO SLOPE AND RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA AT SLOPE.



INLET PROTECTION BARRIERS FOR STAGE II INLETS

IPB-II SYMBOL

GENERAL NOTES:

1. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.
2. GRAVEL BAGS SHALL NOT BLOCK THROAT OF INLET UNLESS DIRECTED BY ENGINEER.

NOTES:

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3. FILTER FABRIC FENCE SHALL NOT BE PLACED ACROSS DRIVEWAYS OR SIDEWALKS ACCESSING PRIVATE PROPERTY.
4. ALL DISTURBED AREAS THAT ARE NOT PAVED, COVERED BY PAVEMENT, SIDEWALK OR STRUCTURES SHALL BE SODDED.
5. PROVIDE A STANDARD STABILIZED CONSTRUCTION EXIT IN THE CONTRACTORS LAY DOWN/STORAGE AREA.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SIDEWALKS AND CURB ADJACENT TO THE CONSTRUCTION. IF THE SIDEWALKS OR CURBS ARE DAMAGED THE CONTRACTOR WILL BE RESPONSIBLE TO REPLACE AT NO EXTRA COST.
7. IN AREAS OF OPEN CUT CONTRACTOR TO RESTORE WORK AREA TO EXISTING CONDITIONS.

NO.	REVISIONS	DATE	NAME
1	UPDATED DEPARTMENT NAME	2/17/15	RS
2			
3			
4			
5			

HARRIS COUNTY ENGINEERING DEPARTMENT

HARRIS COUNTY TEXAS 1836

PROJECT TITLE:

DRAWN BY: JDZ		HCED STANDARD
CK'D BY: NR	SHEET DESCRIPTION: STORM WATER POLLUTION PREVENTION PLAN DETAILS	29
SCALE: NONE		SHEET NO: /
DATE:	APPROVED BY:	

0 50' 100'
1"=50'

NO.	DATE	REVISION	APP.

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GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
116345
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

CIVIL DRAINAGE

STORM WATER POLLUTION PREVENTION PLAN DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-503

HORIZ: 1"=50'
VERT: NONE

SHEET NO. 105 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\1110\5431-01_COH Lift Station\PER\Stately Oaks\000 D-503.dwg

g:\1110\5431-01_coh lift station\per\stately oaks\000 d-503.dwg

SYMBOLS	DESCRIPTION
52 CS	MEDIUM VOLTAGE DRAWOUT TYPE POWER CIRCUIT BREAKER CS-CONTROL SWITCH
(E.O.) FRAME / TRIP	LOW VOLTAGE CIRCUIT BREAKER, 3 POLE UNLESS OTHERWISE NOTED. LSIG IF NOTED MCP IF NOTED ERMS IF NOTED
✳ OR	COMBINATION MOTOR CIRCUIT PROTECTOR AND MAGNETIC MOTOR STARTER, FULL VOLTAGE NON-REVERSING UNLESS OTHERWISE NOTED: ✳ FVR-FULL VOLTAGE REVERSING RVNR-REDUCED VOLTAGE NON-REVERSING 2S1W-TWO SPEED, ONE WINDING 2S2W-TWO SPEED, TWO WINDING
✳ OR	NON-FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE ✳ AMPERE RATING NOTED IF OTHER THAN 30A
✳ OR F	FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, AMPERE RATING AND FUSE SIZE AS NOTED: ✳ AMPERE RATING NOTED IF OTHER THAN 30A ✱ FUSE RATING
MIS OR I	MOTOR ISOLATION SWITCH, HORSEPOWER RATED
	DRAWOUT TYPE EQUIPMENT OR DEVICE
	MEDIUM VOLTAGE CABLE TERMINATION
	MEDIUM VOLTAGE AIR INTERRUPTER SWITCH
	MEDIUM VOLTAGE FUSED AIR INTERRUPTER SWITCH
	MEDIUM VOLTAGE FUSED MOTOR CONTROLLER
30KVA 480V- 120/208Y K-*	TRANSFORMER, RATINGS AND CONNECTIONS AS NOTED. UNLESS OTHERWISE NOTED ON THE SINGLE LINE DIAGRAMS ALL DRY TYPE TRANSFORMERS SERVICING ADMINISTRATIVE AND LABORATORY SPACES SHALL HAVE A K FACTOR OF 13. ALL OTHER DRY TYPE TRANSFORMERS SHALL HAVE A K-4 RATING. ISOLATION TRANSFORMERS SHALL HAVE A K-20 RATING
✳ A:5	CURRENT TRANSFORMER: ✳ QUANTITY A= PRIMARY AMPERES
✳ PV-SV	POTENTIAL TRANSFORMER: ✳ QUANTITY PV= PRIMARY VOLTAGE SV= SECONDARY VOLTAGE
	GENERATOR, RATINGS AND CONNECTIONS AS NOTED
100A ATS-1 N S	TRANSFER SWITCH AUTOMATIC TRANSFER SWITCH (EG ATS-1) MANUAL TRANSFER SWITCH (EG MTS-1) "N" INDICATES NORMAL SOURCE "S" INDICATES STANDBY SOURCE 100A INDICATES CONTINUOUS CURRENT RATING
✳	VARIABLE SPEED DRIVE CONTROLLER ✳ D.C.= D.C. DRIVE CONTROLLER SCR= SILICON CONTROLLED RECTIFIER VFD= VARIABLE FREQUENCY DRIVE AFD= ADJUSTABLE FREQUENCY DRIVE
	VACUUM CONTACTOR
5KW OR E	UNIT HEATER - ELECTRIC HEATING COIL AND FAN
5KW OR U	UNIT HEATER - STEAM OR WATER HEATING COIL AND FAN
M	MOTOR, NUMERAL INDICATES HORSEPOWER
SPD	SURGE PROTECTION DEVICE
VFD	VARIABLE FREQUENCY DRIVE

SYMBOLS	DESCRIPTION
VM ✳	VOLTMETER (WITH SWITCH IF 3-PHASE)
AM ✳	AMMETER (WITH SWITCH IF 3-PHASE)
*	METER ✳ WM- WATTMETER WHM- WATTHOUR METER WHDM- WATTHOUR DEMAND METER WHDR- WATTHOUR DEMAND RECORDER PF- POWER FACTOR METER RT- RUNNING TIME METER TRANSDUCER AX- CURRENT TRANSDUCER WX- WATT TRANSDUCER
#	RELAY, NO. AS INDICATED 25- SYNCHRONISM CHECK RELAY 27- UNDER VOLTAGE RELAY 38- BEARING PROTECTIVE DEVICE 40- LOSS OF EXCITATION RELAY 42- RUNNING CONTACTOR/PILOT RELAY 46- REVERSE PHASE/PHASE BALANCE/CURRENT RELAY 47- PHASE SEQUENCE VOLTAGE RELAY 49- MACHINE OR TRANSFORMER THERMAL RELAY 50- INSTANTANEOUS OVERCURRENT RELAY 50G- INSTANTANEOUS GROUND 51- TIME OVER CURRENT RELAY 51G- TIME OVERCURRENT RELAY, GROUNDING RESISTOR TYPE 51N- TIME OVERCURRENT RELAY, RESIDUAL TYPE 51V- TIME OVERCURRENT RELAY WITH VOLTAGE RESTRAINT 60- NEGATIVE SEQUENCE VOLTAGE RELAY 62- TIME DELAY RELAY 63- OVER PRESSURE RELAY 67- AC DIRECTIONAL OVERCURRENT RELAY 83- AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY 86- LOCKING-OUT RELAY 87- DIFFERENTIAL PROTECTIVE RELAY B- SUFFIX INDICATES "BUS" G- SUFFIX INDICATES "GENERATOR" GF- GROUND FAULT ST- SHUNT TRIP T- SUFFIX INDICATES "TRANSFORMER" X- SUFFIX INDICATES "AUXILIARY"
*	SPECIAL CAPACITOR ✳ SC- SURGE CAPACITOR PF- POWER FACTOR CORRECTION CAPACITOR INCLUDING INDUCTIVE LINK AS NEEDED
	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY CLOSED
	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY OPEN
E-STOP	EMERGENCY STOP PUSH BUTTON WITH RED MUSHROOM HEAD OPERATOR (MAINTAINED CONTACT)
✳ N	STOP PUSH BUTTON WITH RED HEAD OPERATOR (MAINTAINED CONTACT) WITH LOCKABLE OPTION ✳ : E-STOP ✳ : STOP
START STOP	START-STOP PUSH BUTTON CONTROL STATION (MOMENTARY CONTACT) "L" DENOTES LOCKOUT TYPE
START STOP	START-STOP PUSH BUTTON CONTROL STATION, MAINTAINED CONTACT WITH LOCKOUT DEVICE ON STOP
OFF ON	OFF/ON SELECTOR SWITCH
A B C ✳ (XOO) (OOX)	3 POSITION SELECTOR SWITCH, MAINTAINED CONTACT O-OPEN X-CLOSED

POSITION	TOP CONTACT	MIDDLE CONTACT	BOTTOM CONTACT
A	X	O	O
B	0	0	O
C	0	O	X

✳ NAMEPLATE (A/B/C)
HOA- HAND/OFF/AUTO
HOR- HAND/OFF/REMOTE
LOR- LOCAL/OFF/REMOTE
RSL- RAISE/STOP/LOWER
TOA- TEST/OFF/AUTO

NOTE: 2 POSITION MULTI-CONTACT SWITCH FOLLOWS SAME CONVENTION

M #	MOTOR STARTER COIL, NUMBER AS INDICATED
CR #	CONTROL RELAY COIL, NUMBER AS INDICATED
	RVSS: REDUCED VOLTAGE STATIC SOLID SOFT STARTER

SYMBOLS	DESCRIPTION
*	PILOT LIGHT, COLOR AS NOTED ✳ R- RED G- GREEN B- BLUE W- WHITE A- AMBER
* PTT	PILOT LIGHT, PUSH-TO-TEST TYPE, COLOR AS NOTED ABOVE.
TD	TIME DELAY RELAY RANGE AS NOTED SET POINT AS NOTED TDD-TIME DELAY AFTER DE-ENERGIZATION-OFF DELAY TDE-TIME DELAY AFTER ENERGIZATION-ON DELAY
	NOTC-NORMALLY OPEN, TIMED CLOSING WHEN ENERGIZED
	NCTO-NORMALLY CLOSED, TIMED OPENING WHEN ENERGIZED
	NOTO-NORMALLY OPEN, TIMED OPENING WHEN DE-ENERGIZED
	NCTC-NORMALLY CLOSED, TIMED CLOSING WHEN DE-ENERGIZED
⊗	FIELD INSTRUMENT, TAG NO. OR LOOP # AS INDICATED ✳INDICATES INSTRUMENT TYPE DEFINED ON LOOP SHEETS ## - INDICATES LOOP NO.
OR ⊗	LIQUID LEVEL (FLOAT) SWITCH NORMALLY OPEN, CLOSES ON RISING LEVEL NORMALLY CLOSED, OPENS ON RISING LEVEL NORMALLY OPEN, CLOSES ON DROPPING LEVEL NORMALLY CLOSED, OPENS ON DROPPING LEVEL
OR ⊗	PRESSURE OR VACUUM SWITCH NORMALLY OPEN, CLOSES ON RISING PRESSURE NORMALLY CLOSED, OPENS ON RISING PRESSURE NORMALLY OPEN, CLOSES ON DROPPING PRESSURE NORMALLY CLOSED, OPENS ON DROPPING PRESSURE
OR ⊗	TEMPERATURE SWITCH OR THERMOSTAT NORMALLY OPEN, CLOSES ON RISING TEMPERATURE NORMALLY CLOSED, OPENS ON RISING TEMPERATURE NORMALLY OPEN, CLOSES ON DROPPING TEMPERATURE NORMALLY CLOSED, OPENS ON DROPPING TEMPERATURE
OR ⊗	FLOW SWITCH (AIR, WATER, ETC.) NORMALLY OPEN, CLOSES ON INCREASED FLOW NORMALLY OPEN, CLOSES ON DROPPING FLOW NORMALLY CLOSED, OPENS ON INCREASED FLOW NORMALLY CLOSED, OPENS ON DROPPING FLOW
OR ⊗	POSITION (LIMIT) SWITCH NORMALLY OPEN NORMALLY OPEN - HELD CLOSED NORMALLY CLOSED NORMALLY CLOSED - HELD OPEN
OR ⊗	TORQUE SWITCH NORMALLY CLOSED, OPENS ON HIGH TORQUE
	CONDUCTORS OR CONDUITS CROSSING PATHS BUT NOT CONNECTED
	CONDUCTORS ELECTRICALLY CONNECTED
FAN	SUPPLY/EXHAUST FAN

SYMBOLS	DESCRIPTION
LA SC	LIGHTNING ARRESTER/SURGE CAPACITOR
OR	GROUND ROD GROUND ROD WELL
30A	FUSE, AMPERE RATING AS NOTED
OR HTR	HEATER
	INDUCTOR
TG	TACHOMETER GENERATOR
	CONTACT, NORMALLY OPEN (NO)
	CONTACT, NORMALLY CLOSED (NC)
	OVERLOAD RELAY HEATER
K	KEY INTERLOCK
TB	TERMINAL OR TEST BLOCK
RTD	RESISTANCE TEMPERATURE DETECTOR
VE	VIBRATION DETECTOR
DM	DAMPER MOTOR
ETM OR	ELAPSED TIME METER
MOV	MOTOR OPERATED VALVE
	PUSH BUTTON STATION, REFER TO ELECTRICAL SCHEMATIC FOR NUMBER OF DEVICES.
J	JUNCTION BOX
JP	POWER JUNCTION BOX
JI	4-20mA SIGNAL JUNCTION BOX
JC	CONTROL JUNCTION BOX
PB	PULL BOX
TC	TERMINATION CABINET
	REMOTE DEVICES
5	MOV WITHOUT INTEGRATED DISCONNECT
5	MOV WITH INTEGRATED DISCONNECT
	INDICATES LIMITS OF EQUIPMENT OR WIRING ENCLOSURE
MPR	(MPR) MOTOR PROTECTION RELAY

GENERAL NOTE

THIS IS A STANDARD LEGEND. SOME SYMBOLS MAY NOT APPEAR ON THE DRAWINGS.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

ELECTRICAL
LEGENDS & SYMBOLS
SHEET 1 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-001
HORIZ: NONE
VERT: NONE
SHEET NO. 106 OF 225
DRAWING SCALE
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FILE PATH: C:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\GENERAL_GE-001.dwg

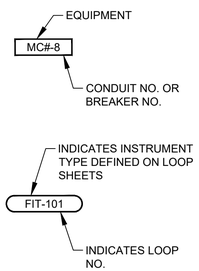
SYMBOLS	DESCRIPTION
A LA-3 b	REFER TO LIGHT FIXTURE SCHEDULE FOR TYPE FIXTURE: "A"- FIXTURE TYPE "b"- CONTROLLED BY SWITCH "b" "LA-3"- CIRCUIT 3 FROM PANEL LA
b A LA-3	REFER TO LIGHT FIXTURE SCHEDULE FOR TYPE FIXTURE, NOTATIONS SAME AS ABOVE
A LA-3 OR A LA-3 NS	INDICATES LIGHT FIXTURES WHICH ARE NONSWITCHED, NOTATIONS SAME AS ABOVE "NS" - NONSWITCHED
A LA-3 b	WALL MOUNTED LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
A LA-3 b	POLE MOUNTED LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
A LA-3	EMERGENCY LIGHTING BATTERY UNIT WITH TWO LAMP HEADS, NOTATIONS SAME AS ABOVE
A	REMOTE EMERGENCY ADJUSTABLE WALL LIGHTING FIXTURE WITH TWO LAMP HEADS, NOTATIONS SAME AS ABOVE
A LA-3	CEILING MOUNTED EXIT SIGN, NOTATIONS SAME AS ABOVE
A LA-3	WALL OUTLET EXIT SIGN. ARROW INDICATES DIRECTION OF EGRESS, NOTATIONS SAME AS ABOVE
	CONDUIT, EXPOSED/SURFACE MOUNTED
	CONDUIT OR DUCTBANK, CONCEALED
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING UP
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING DOWN
	CONDUIT STUBBED OUT AND CAPPED
2(3#3/0+1#2G, 3"C)	DENOTES A QUANTITY OF 2 SETS OF THREE (3) NO.3/0 AWG CONDUCTORS AND 1 NO.AWG GROUND CONDUCTOR EACH INSTALLED IN 3" CONDUIT.
2(2/C#16TS)	DENOTES A QUANTITY OF TWO INSTRUMENT CABLES. EACH CONSISTS OF TWO NO.16 AWG CONDUCTORS TWISTED TOGETHER AND COVERED WITH A METALLIC SHIELD AND AN OVERALL PROTECTIVE JACKET. REFER TO THE SPECIFICATIONS FOR THE EXACT CABLE TO BE PROVIDED.
3(4"C)	DENOTES A QUANTITY OF THREE 4-INCH CONDUITS.
	FLEXIBLE METAL CONDUIT "WHIP" (2#12, #12G, 3/4"C UNLESS OTHERWISE NOTED) FOR RECESSED LIGHTING FIXTURES AND LIQUID TIGHT MOTOR CONNECTIONS
LP#-1,3	HOMERUN, CIRCUITS 1 AND 3 RUN TO PANEL LP-1
$b	SINGLE POLE SWITCH "b"- INDICATES SWITCH LEG SHALL CONTROL LIGHT FIXTURES WITH "b" DESIGNATION
$b x	MULTI POLE SWITCH "x"- INDICATES NUMBER OF POLE "b"- NOTATIONS SAME AS ABOVE
$b P	SINGLE POLE SWITCH AND PILOT LIGHT, "b"- NOTATIONS SAME AS ABOVE
$b D	DIMMER LIGHTING CONTROL SWITCH, "b"- NOTATIONS SAME AS ABOVE
$b TM	TIME SWITCH, "b"-NOTATIONS SAME AS ABOVE
$M	MANUAL MOTOR STARTER /DISCONNECT
$OS	SINGLE POLE SWITCH WITH OCCUPANCY SENSOR
$DM	SINGLE POLE DIMMER SWITCH
$x b xx	SWITCH ENCLOSURE "x"- NOTATIONS SAME AS ABOVE "b"- NOTATIONS SAME AS ABOVE "xx"- INDICATES ENCLOSURE TYPE
LC-1	LIGHTING CONTACTOR WITH NUMBER OF POLES AS INDICATED

SYMBOLS	DESCRIPTION
L*-## OR L*-##	LIGHTING PANELBOARD (TYPICAL 120V/240V OR 120V/208V)
H*-## OR H*-##	DISTRIBUTION PANELBOARD (TYPICAL 277V/480V)
LA-3	DUPLEX RECEPTACLE, 20A, 120V, 2P, 3W GFI- GROUND FAULT INTERRUPTER TYPE WP- WEATHERPROOF "LA-3"- CIRCUIT 3 FROM PANEL LA
	WELDING RECEPTACLE
	20A, 240V, 2P, 3W, RECEPTACLE
	CLASS 1, DIVISION 1, RATED TWIST LOCK RECEPTACLE, VOLTAGE AND AMPERAGE RATING AS NOTED
	SINGLE FACE, SINGLE GANG PEDESTAL WITH 20A, 120V, 2P, 3W DUPLEX RECEPTACLE, FURNISHED AND INSTALLED UNDER DIVISION 16 UNLESS OTHERWISE NOTED. * DENOTES FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS BUT INSTALLED UNDER DIVISION 16
D	DOUBLE FACE, SINGLE GANG PEDESTAL WITH 20A, 120V, 2P, 3W DUPLEX RECEPTACLE AND 20A, 240V, 2P, 3W SINGLE RECEPTACLE, FURNISHED AND INSTALLED UNDER DIVISION 16 UNLESS OTHERWISE NOTED. * DENOTES FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS BUT INSTALLED UNDER DIVISION 16
	DOUBLE RECEPTACLE, 20A, 120V, 2P, 3W MOUNTED IN BOX CURB FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS BUT INSTALLED UNDER DIVISION 16
	SINGLE GANG 20A, 120V, 3P, 3W RECEPTACLE
	QUAD RECEPTACLE
OS	OCCUPANCY SENSOR CAPABLE OF VACANCY
PC	PHOTOCELL
	QUICK CONNECT TERMINALS

SYMBOLS	DESCRIPTION
COMMUNICATIONS SYSTEMS	
	TELEPHONE OUTLET
	DATA OUTLET
P	DATA INPUT/OUTPUT CABLE OUTLET. "P" DENOTES PROCESS COMPUTER SYSTEM
	VOICE/DATA OUTLET
S	PAGING SPEAKER HORN
S	PAGING SPEAKER BI-DIRECTIONAL
S	PAGING SPEAKER, CEILING MOUNTED TYPE
S	PAGING SPEAKER, WALL MOUNTED TYPE
SECURITY SYSTEMS	
SAP	SECURITY ALARM PANEL
DS	SECURITY ALARM DOOR SWITCH
KP	SECURITY ALARM KEY PAD
CR	SECURITY SYSTEM CARD ACCESS READER
WS	SECURITY ALARM WINDOW SWITCH
MD	SECURITY ALARM MOTION DETECTOR
	SECURITY CAMERA CCTV- CLOSED CIRCUIT TV CAMERA PTZ- PAN, TILT, ZOOM CAMERA LENS CONTROLS
GB	GLASS BREAK DETECTOR
ACP	ACCESS CONTROL PANEL
FIRE ALARM SYSTEMS	
FACP	FIRE ALARM CONTROL PANEL
SD	SMOKE DETECTOR : D- DENOTES DUCT SMOKE DETECTOR R- DENOTES FIXED TEMPERATURE RATE-OF-RISE TYPE.
F	FIRE ALARM MANUAL PULL STATION, MOUNT AT 4'-0"
	ALARM HORN, MOUNT AT 7'-6" : F- DENOTES FIRE ALARM
	ALARM STROBE, MOUNT AT 6'-8" : F- DENOTES FIRE ALARM
	ALARM HORN AND STROBE LIGHT COMBINATION, MOUNT AT 6'-8" : F- DENOTES FIRE ALARM

TAGGING		
EQUIPMENT	EQUIPMENT TAG	CONDUIT TAG
MOTOR CONTROL CENTER	MCC-1	MC1-XX
SWITCHBOARD	SWBD-1	SB1-XX
SWITCHGEAR	SWGR-1	SG1-XX
PROGRAMMABLE LOGIC CABINET	PLC-1	PL1-XX
VARIABLE FREQUENCY DRIVE	VFD-1	VF1-P
LOW VOLTAGE TRANSFORMER	TX-LX OR TX-HX	TXLX-P OR TXHX-P
SERVICE TRANSFORMER	TX-1	TX1-P
GENERATOR	GEN-1	GN1-X
LIGHTING/POWER PANELBOARD	LP/PP-XX	XX-XX
AUTOMATIC TRANSFER SWITCH	ATS-1	AT1-XX
TYPICAL TAG FOR CONDUIT FROM THIS EQUIPMENT TO DOWN STREAM LOAD FOR EXAMPLE.		

EXAMPLE LEGEND:



ABBREVIATIONS	
AC	ALTERNATING CURRENT
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AG	ABOVE GRADE
ALUM	ALUMINUM
AMP/A	AMPERE
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DOOR INTERLOCK
DN	DOWN
DWG	DRAWING
EHH	ELECTRICAL HANDHOLE
EC	EMPTY CONDUIT
ELEC	ELECTRICAL
ELEV	ELEVATION
EM	EMERGENCY
EMH	ELECTRICAL MANHOLE
EO	ELECTRICALLY OPERATED
ERMS	ENERGY-REDUCING MAINTENANCE SWITCH
FBO	FURNISHED BY OTHERS
FO	FIBER OPTIC
FRP	FIBERGLASS REINFORCED POLYESTER
FU	FUSE
GCP	GENERATOR CONTROL PANEL
GEN	GENERATOR
G, GRD	GROUND
GFI	GROUND FAULT INTERRUPTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GO	GATE OPERATOR
GRS	GALVANIZED RIGID STEEL
HH	HANDHOLE
HT	HEIGHT
HTP	HEAT TRACE PANEL
HZ	HERTZ
IMH	INSTRUMENT MAN HOLE
INST	INSTRUMENT
LA	LIGHTNING ARRESTER
LC	LIGHTNING CONTACTOR
LCP	LOCAL CONTROL PANEL
LGTS	LIGHTS
LP	LIGHTING PANEL
	CONTINUED ABOVE RIGHT

	CONTINUED BELOW LEFT
LSIG	LONG TIME/SHORT TIME/ INSTANTANEOUS/GROUND FAULT FEATURE INCLUDED
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTG	MOUNTING
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
NC	NORMALLY CLOSED
NO	NORMALLY OPEN OR NUMBER
NTS	NOT TO SCALE
OL	OVERLOAD
OLX	OVERLOAD CONTROL RELAY
PB	PUSH BUTTON OR PULL BOX
PCC	PUMP CONTROL CONSOLE
PPR	PHASE PROTECTIVE RELAY
PFR	PHASE FAILURE RELAY
PH	PHASE
PNLBD	PANELBOARD
PR	PAIR
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST TYPE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RCP	RELAY CONTROL PANEL
RECP	RECEPTACLES
RVSS	REDUCED VOLTAGE SOFT STARTER
SC	SURGE CAPACITOR
SCH	SCHEMATIC
SCCR	SHORT CIRCUIT CURRENT RATING
SEC	SECONDS OR SECONDARY
SH	SHIELDED OR SHEET
SHT	SHEET
SM	MOTOR RATED SWITCH
SN	SOLID NEUTRAL
SS	STAINLESS STEEL
ST	STARTER
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TC	TERMINATION CABINET
TEL	TELEPHONE
TO	TIME DELAY ON OPENING
TS	TEMPERATURE SWITCH
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TSW	TWISTED SHIELDED WIRE
TYP	TYPICAL
UG	UNDERGROUND
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VO	VALVE OPERATOR
W	WIRE
WP	WEATHERPROOF
XP	EXPLOSION PROOF
XFMR	TRANSFORMER

GENERAL NOTE

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NO	DATE	REVISION	APP.
1	06/09/2025	PERMIT SET	HF

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

ELECTRICAL
LEGENDS & SYMBOLS
SHEET 2 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-002

HORIZ: NONE
VERT: NONE

SHEET NO. 107 OF 225

DRAWING SCALE
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LUMINAIRE SCHEDULE

FIXTURE TYPE	VOLTAGE	LAMP TYPE	TOTAL INPUT WATTS	TOTAL OUTPUT LUMENS	MOUNT	DESCRIPTION	MAKE/MODEL
A	120/277V UNIVERSAL DRIVER	LED	42	4000	SUSPENDED	LINEAR LED LUMINAIRE, UV-STABILIZED, INJECTION-MOLDED, IMPACT-RESISTANT, FROSTED POLYCARBONATE HOUSING, -29°C TO 40°C OPERATING TEMPERATURE, 4000K COLOR TEMPERATURE, 80CRI, UV-STABILIZED, INJECTION-MOLDED, IMPACT-RESISTANT CLEAR POLYCARBONATE LENS, UL 1598 WET LOCATION LISTED.	LITHONIA ARCHWAY VAP LED SERIES VAP-4000L-PCL-WD-MVOLT-40K-80CRI-VAPCMB DAY-BRITE CFI VAPORLUME LED V2 V2WPB70L840-4-UNV TBK OR WBK ACESSORY & FKR-126
B	120/277V UNIVERSAL DRIVER	LED	13	---	STEM MOUNT	RED POLYCARBONATE LENS SUITABLE FOR WET LOCATIONS - 120V, SERIES 105 XBR	---
C	120/277V UNIVERSAL DRIVER WITH EMERGENCY BATTERY PACK WITH PHOTO CELL	LED	12W	1500	WALL	POWDER COATED DIE-CAST ALUMINUM HOUSING, NATURAL ALUMINUM FINISH, -30°C TO 40°C OPERATING TEMPERATURE, 4000K COLOR TEMPERATURE, 70CRI, GASKETED LENS, IESNA TYPE III DISTRIBUTION, NEMA 4X RATED, WET LOCATION RATED, WITH EMERGENCY BATTERY PACK.	LITHONIA LIGHTING WST LED SERIES WST LED P1 40K VF MVOLT E20WC GARDCO LED WALL SCONCE 101L SERIES 101L-16L-530-NW-G1-3-EBPC-UNV-MGY
D	208V UNIVERSAL DRIVER WITH EMERGENCY BATTERY PACK	LED	62	-	POLE MOUNT	HIGH EFFICIENCY LED UNIT WITH PRISMATIC BOROSILICATE GLASS; UL LISTED FOR WET LOCATION USE WITH 208VAC PHOTO CELL	HUBBLE SERIES EML EMLC-50W-30D4 WITH PHOTO CELL OR EQUAL
E	120/277V UNIVERSAL DRIVER WITH EMERGENCY BATTERY PACK	LED	1.2	536	WALL 8-FT ABOVE FLOOR	LED STANDBY EMERGENCY LUMINAIRE, WHITE ENGINEERING GRADE THERMOPLASTIC HOUSING, 16°C TO 32°C OPERATING TEMPERATURE, IMPACT RESISTANT, CORROSION-PROOF, DAMP LOCATION RATED, EMERGENCY BATTERY PACK INCLUDED.	LITHONIA ELM6 LED SERIES LV-S-W1R-120/277-EL-N-UM-DL
X	120/277V UNIVERSAL DRIVER WITH EMERGENCY BATTERY PACK	LED	18.2	N/A	UNIVERSAL	EMERGENCY EXIT SIGN, CAST-ALUMINUM, NEMA-4X, CLEAR UV-STABLE POLYCARBONATE COVER, SINGLE WHITE POLYCARBONATE, FACEPLATE WITH DIRECTIONAL CHEVRON KNOCKOUTS. WHITE HOUSING, UNIVERSAL MOUNT, SEALED MAINTENANCE-FREE NICKEL CADMIUM BATTERY WITH 90 MINUTE CAPACITY.	LITHONIA LIGHTING LV EL N LED SERIES LV-S-W-2-R-120/277-EL N-UM-4X
TPA	N/A	N/A	N/A	N/A	BASE MOUNTED POLE	ROUND STRAIGHT ALUMINUM POLE, 4" DIAMETER WITH 2-3/8" TENON, 8' POLE WITH LOW PROFILE BASE COVER, HANDHOLE WITH RECESSED COVER. RATED FOR 150 MPH, MATCH TENON TO LUMINAIRE TYPE.	LITHONIA LIGHTING FLORIDA RATED POLE RSALP 8 4C T20 VD DNA
TPB	N/A	N/A	N/A	N/A	BASE MOUNTED POLE	ROUND STRAIGHT ALUMINUM POLE, 5" DIAMETER WITH 2-3/8" TENON, 16' POLE WITH LOW PROFILE BASE COVER, HANDHOLE WITH RECESSED COVER. RATED FOR 150 MPH, MATCH TENON TO LUMINAIRE TYPE.	LITHONIA LIGHTING FLORIDA RATED POLE RSALP 16 5C T20 VD DNA

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

ELECTRICAL
LIGHTING FIXTURE SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-003

HORIZ: NONE
VERT: NONE

SHEET NO. 108 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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ELECTRICAL GENERAL NOTES

1. THE NOTES CONTAINED ON THIS SHEET ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR WHEN WORKING IN THE FIELD, AND CONTAIN EXCERPTS FROM THE SPECIFICATION SECTIONS. HOWEVER THE CONTRACTOR IS HEREBY ADVISED THAT THE CONTRACT DOCUMENTS CONSIST OF BOTH THE DRAWINGS AND THE SPECIFICATIONS, AND THAT THE CONTRACTOR MUST COMPLY FULLY WITH BOTH THE BOUND DRAWINGS AND THE BOUND SPECIFICATIONS.

2. ALL EQUIPMENT WIRING, RACEWAYS, ETC. SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, LOCAL CODES, AND INDUSTRY STANDARDS (IE. UL, NEMA, IEEE, ANSI, ETC.) THE DRAWING NOTES AND DETAILS SHALL BE COMPLIED WITH IN ADDITION TO THE REQUIREMENTS IN THE SPECIFICATIONS. REFER TO EACH SPECIFICATION SECTION FOR SPECIFIC REQUIREMENTS.

3. ALL RACEWAY INSTALLATIONS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. ALL EXPOSED RACEWAY SHALL BE INSTALLED PARALLEL TO BEAMS, CEILINGS, FLOORS AND WALLS. SEE SPECIFICATION ON RACEWAYS FOR ADDITIONAL REQUIREMENTS.

4. CONDUITS SHALL BE TERMINATED IN A NEAT MANNER AND STRICTLY IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWING DETAILS.

5. CONDUITS TERMINATED INTO ENCLOSURES SHALL BE PERPENDICULAR TO THE WALLS OF THE ENCLOSURE. THE USE OF SHORT SEALTIGHT ELBOW FITTINGS FOR SUCH TERMINATIONS IS NOT PERMITTED.

6. ALL RACEWAY INSTALLATIONS, CROSSING EXPANSION JOINTS OR TRANSITIONS FROM BELOW GRADE TO EXPOSED ABOVE GRADE, SHALL HAVE EXPANSION OR EXPANSION/DEFLECTION TYPE FITTINGS AS SPECIFIED FOR THE APPLICATION. SEE THE DRAWINGS AND THE SPECIFICATION ON RACEWAYS FOR THE EXACT TYPE OF FITTING TO BE USED.

7. NO CONDUIT SMALLER THAN 3/4", NOR WIRE SMALLER THAN NO. 12 AWG, SHALL BE USED UNLESS SPECIFICALLY NOTED.

8. ALL UNDERGROUND SINGLE CONDUITS AND DUCTBANKS OF MULTIPLE CONDUITS SHALL BE RIGID PVC CONDUIT ENCASED IN REINFORCED RED CONCRETE. CONCRETE DYED RED BEFORE PLACEMENT. MINIMUM SIZE IS 2 INCH. FIELD VERIFY THE ROUTING OF ALL EXISTING UNDERGROUND CONDUIT AND DUCTBANKS. COORDINATE ROUTING OF NEW CONDUIT AND DUCTBANKS TO AVOID INTERFERENCE WITH EXISTING CONDUIT, DUCTBANKS, AND OTHER UNDERGROUND UTILITIES.

9. ALL CHANGES OF DIRECTION GREATER THAN 20 DEGREES IN UNDERGROUND SINGLE, OR DUCTBANKS OF MULTIPLE CONDUITS, SHALL BE ACCOMPLISHED USING PVC COATED RIGID ALUMINUM LONG RADIUS BENDS. BENDS OF PVC CONDUIT GREATER THAN 20 DEGREES, OR THE USE OF FLEXIBLE CONDUIT OF ANY TYPE, WILL NOT BE PERMITTED. SEE THE SPECIFICATIONS FOR MORE REQUIREMENTS.

10. LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL BE USED FOR THE PRIMARY AND SECONDARY OF TRANSFORMERS, GENERATOR TERMINATIONS AND OTHER EQUIPMENT WHERE VIBRATION IS PRESENT. USE IN OTHER LOCATIONS IS NOT PERMITTED, EXCEPT FOR CONNECTIONS TO INSTRUMENTATION TRANSMITTERS, WHERE MULTIPLE PENETRATIONS ARE REQUIRED. LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL HAVE A MAXIMUM LENGTH NOT GREATER THAN THAT OF A FACTORY MANUFACTURED LONG RADIUS ELBOW OF THE CONDUIT SIZE BEING USED. THE MAXIMUM BENDING RADIUS SHALL NOT BE LESS THAN THAT SHOWN IN THE NEC CHAPTER 9, TABLE 2, "OTHER BENDS". BX OR AC TYPE PREFABRICATED CABLES WILL NOT BE PERMITTED.

11. THE WIRING DIAGRAMS, BLOCK DIAGRAMS, QUANTITY/SIZES OF WIRES/CONDUITS REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY APPROVED. ALL MODIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFIED.

12. ALL JUNCTION BOXES, PULL BOXES AND TERMINATION BOXES IN NEMA 12 AREAS SHALL BE ALUMINUM. FOR NEMA 4X AREAS SEE SPECIFICATIONS FOR BOX DETAILS AND SPECIFICATIONS.

13. SEAL ALL RACEWAYS ENTERING JUNCTION BOXES OR CONTROL PANELS CONTAINING ELECTRICAL OR INSTRUMENTATION EQUIPMENT WITH WATERTIGHT SEALANT. REFER TO THE SPECIFICATIONS FOR DETAILS.

14. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURE LOCATIONS, OR TERMINAL BOX LOCATIONS, ARE APPROXIMATE. THE EXACT LOCATIONS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER/ENGINEER, DURING CONSTRUCTION, AT NO ADDITIONAL COST TO THE OWNER.

15. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURES DIMENSIONS ARE APPROXIMATE. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURES OR TERMINAL BOX DIMENSIONS SHALL BE VERIFIED WITH THE EQUIPMENT SUPPLIER. ALLOW FOR LOCATION CHANGES AND INCLUDE IN THE CONTRACT PRICE. THE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT AND ROUTING OF ALL CABLES AND CONDUITS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER/ENGINEER DURING CONSTRUCTION.

16. CORING OF AN EXISTING STRUCTURE SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER/ENGINEER. CORING THROUGH STRUCTURAL BEAMS IS STRICTLY PROHIBITED WITHOUT PRIOR WRITTEN APPROVAL FROM THE OWNER/ENGINEER.

17. THE LOCATION OF ALL ELECTRICAL EQUIPMENT AND ROUTING OF CABLES AND CONDUITS SHALL BE COORDINATED AND APPROVED BY THE OWNER.

18. THE DUCTBANK ROUTING AS SHOWN ON THE DRAWING IS APPROXIMATE. FIELD VERIFY THE EXACT DUCTBANK ROUTING, CABLE LENGTH AND CONDUIT LENGTH.

19. PROVIDE CONDUIT SEALS FOR CONDUIT PENETRATIONS AS PER NEC AND NFPA820.

20. COORDINATE ALL WORK WITH THE OWNER.

21. LOCATE ALL UNDERGROUND UTILITIES BEFORE DIGGING. COORDINATE THE EFFORT WITH THE OWNER.

22. ALL SLOTTED CHANNEL, SLOTTED CHANNEL SUPPORT MATERIAL, WASHERS, SCREWS, NUTS, CONDUIT CLAMPS, ALL THREAD SPRING NUTS AND MISC. MOUNTING HARDWARE SHALL BE 316 STAINLESS STEEL.

23. LIGHTING FIXTURES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS. THE MOUNTING HEIGHT SHALL BE MEASURED FROM THE BOTTOM OF THE LIGHTING FIXTURE TO THE FINISHED FLOOR.

24. CONDUIT AND WIRE FOR THE HVAC EQUIPMENT AND MISCELLANEOUS DEVICES SHALL BE:

    A. 3/4" (MIN) RIGID ALUMINUM.

    B. NO.14 XHHW CU. WIRE XHHW (MIN.).

    C. IN ACCORDANCE WITH ALL ELECTRICAL AND HVAC SPECIFICATIONS REQUIREMENTS.

25. CONDUITS AND WIRES SHOWN ON THE INTERFACE DIAGRAM SHALL BE INSTALLED BY THE CONTRACTOR. GROUPING OF CONDUIT AND WIRE MAY BE CHANGED, IF APPROVED BY THE ENGINEER AND OWNER.

26. ALL CONDULETS SHALL BE FORM 7 AND SHALL HAVE 316 SS CLAMP COVERS WITH 316 SS CLAMPS AND SCREWS. SCREW DOWN COVERS ARE UNACCEPTABLE. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.

27. ALL BARE COPPER GROUNDING CONDUCTORS SHALL BE TINNED, ALL GROUND RODS SHALL BE 3/4" BY 10' LONG. ALL EXPOSED COPPER GROUND CABLES SHALL BE GREEN INSULATED CONDUCTORS. PROVIDE XHHW INSULATION.

28. WHERE NOTES ON THE DRAWING INDICATE THAT THE CONTRACTOR SHALL FIELD-VERIFY, THE INTENT IS FOR THE CONTRACTOR TO INVESTIGATE TO THE EXTENT NECESSARY TO PROVIDE THE WORK AND MATERIALS PRIOR TO BIDDING AND INCLUDE ALL COSTS IN THE BID PRICE. THE CONTRACT PRICE SHALL NOT BE INCREASED WHEN THE CONTRACTOR HAS NOT INVESTIGATED PER THE NOTES DIRECTING THAT BE DONE.

TYPICAL ENCLOSURE TYPES BY AREA TYPE

NON-HAZARDOUS AREAS	BOXES & ENCLOSURES 1	3R	4X	4X*	12	CONDUIT
OUTDOOR; GENERAL AREAS		X	X			PVC COATED ALUMINUM
OUTDOOR; CHEMICAL AREAS				X		SCHEDULE 80 PVC
INDOOR; CHEMICAL ROOM				X		SCHEDULE 80 PVC
INDOOR; CONDITIONED SPACE					X	RIGID ALUMINUM
INDOOR; NON-CONDITIONED SHOP SPACE					X	RIGID ALUMINUM
INDOOR; NON-CONDITIONED PROCESS AREA			X			RIGID ALUMINUM
INDOOR, ADMIN BUILDING	X					EMT/RIGID ALUMINUM
CLASS I, DIVISION 1	REFER TO NEC, NFPA-820, AND CONTRACT CONSTRUCTION SPECIFICATIONS					
CLASS I, DIVISION 2	REFER TO NEC, NFPA-820, AND CONTRACT CONSTRUCTION SPECIFICATIONS					

GENERAL NOTES:

- EQUIPMENT SUCH AS MOTOR CONTROL CENTER, SWITCHGEAR, VFDS, AND OTHER STAND-ALONE MOTOR STARTERS ARE TO BE SPECIFIED UNIQUELY.
- NEMA 1 ENCLOSURES ARE TO BE NEMA 1 GASKETED.
- NEMA 4X* ENCLOSURES ARE TO BE NON-METALLIC (ie PVC) NEMA 4X
- CONDUIT INSIDE ADMIN BUILDING LOCATION IS TO BE EMT IF CONCEALED IN DRY WALL (AKA SHEET ROCK WALL): OTHERWISE RIGID ALUMINUM.
- OUTDOOR GENERAL AREAS COULD BE 3R OR 4X DEPENDING ON OWNER PREFERENCE AND WHETHER WTP OR WWTP - REFER TO DRAWINGS.

CONDUIT TYPE	LOCATION
RIGID GALVANIZED CONDUIT	NOT ACCEPTABLE FOR USE ON THIS PROJECT EXCEPT FOR THE UTILITY COMPANY'S CONDUCTORS. ALL UTILITY COMPANY'S DUCTS SHALL BE AS SPECIFIED BY UTILITY COMPANY.
PVC COATED ALUMINUM CONDUIT	ALL EMBEDDED CONDUIT BENDS, UNDERGROUND DUCTBANK OF MORE THAN 20 DEGREES, AND ALL CONDUIT STUB-UPS TO A MINIMUM OF 6" ABOVE FINISHED FLOOR OR GRADE AND IN CHLORINE AND CAUSTIC ROOMS.
LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT	RACEWAY CONNECTION TO VIBRATING EQUIPMENT ONLY, IN ALL AREAS.
RIGID NON-METALLIC, SCHEDULE 40 PVC CONDUIT	UNDERGROUND ENCASED IN RED DYE REINFORCED CONCRETE. (AS WHERE SPECIFIED)
RIGID NON-METALLIC, SCHEDULE 80 PVC CONDUIT	FOR USE IN CHLORINE AND CAUSTIC ROOMS, AND UNDERGROUND. ENCASED IN RED DYED REINFORCED CONCRETE. (AS WHERE SPECIFIED)
FLEXIBLE ALUMINUM CONDUIT	FIXTURE WHIP CONNECTION TO LIGHTING FIXTURES IN NEMA 12 AREAS (MAXIMUM 3-FT). BX OR AC TYPE PREFABRICATED CABLES ARE NOT PERMITTED.
ALUMINUM RIGID METAL CONDUIT	ALL ABOVE GRADE AREAS, EXCEPT FOR CONCRETE EMBEDDED AND THOSE AREAS ALREADY DESCRIBED IN THIS TABLE
ELECTRIC METALLIC TUBING (EMT) CONDUIT	FOR USE ONLY ON CONCEALED, ABOVE GROUND, INTERIOR ELECTRICAL WIRING IN AIR-CONDITIONED ADMINISTRATIVE BUILDINGS REMOTE TO THE PROCESS AREA, AND CLEARLY DEFINED AS SUCH ON THE DRAWINGS OR IN THE SPECIFICATIONS.

DEMOLITION NOTES

1. COORDINATE THE DEMOLITION OF ELECTRICAL CONDUIT, WIRE, EQUIPMENT AND DEVICES WITH THE GENERAL DEMOLITION AND SCHEDULE. THE DRAWINGS ARE INTENDED TO CONVEY THE GENERAL NATURE AND SCOPE OF THE DEMOLITION WORK. EVERY ITEM TO BE DEMOLISHED MAY NOT BE SHOWN. FIELD VERIFY, AND INCLUDE ALL DEMOLITION WORK IN THE CONTRACT PRICE.

2. PROVIDE TEMPORARY WIRE AND CONDUIT FOR THE EQUIPMENT WHICH MAY BE AFFECTED BY THE DEMOLITION BUT TO REMAIN IN SERVICE.

3. RELOCATE AND RECONNECT POWER AND CONTROL RACEWAYS AND CONDUCTORS TO EQUIPMENT AFFECTED BY DEMOLITION WORK.

4. ALL CONDUCTORS BEING DEMOLISHED SHALL BE DISCONNECTED AND REMOVED FROM THE LOAD TO THE SOURCE. SURFACE MOUNTED CONDUITS AND MOUNTING HARDWARE SHALL BE REMOVED. UNDERGROUND CONDUITS WHICH ARE NOT BEING REMOVED OR OTHERWISE NOT BEING MADE UNUSABLE SHALL BE CAPPED AND TAGGED AS SPARE, WITH INFORMATION CLEARLY INDICATING THE LOCATION OF THE OTHER END.

5. ALL SURFACES WHERE DEMOLISHED EQUIPMENT OR CONDUIT IS REMOVED SHALL BE CLEANED, PATCHED AND PAINTED TO MATCH THE SURROUNDING SURFACE.

6. CHECK THE FUNCTION OF EACH CONDUCTOR BEFORE REMOVING OR DISCONNECTING.

7. IF A CONDUCTOR WHICH HAS TO STAY IN SERVICE (NOT BEING DEMOLISHED) IS INSTALLED IN A COMMON CONDUIT WITH CONDUCTORS WHICH ARE BEING DEMOLISHED, THE CONTRACTOR SHALL REMOVE ALL CONDUCTORS FROM THE CONDUIT, PROVIDE NEW CONDUCTORS WHICH ARE REPLACEMENTS FOR THE CONDUCTORS THAT ARE TO REMAIN IN SERVICE AND RE-INSTALL THE NEW CONDUCTORS. AFTER THE CONDUCTORS ARE PULLED, MEGGER OR VFL TEST EACH CONDUCTOR. CONNECT BOTH ENDS OF THE NEW CONDUCTORS AND TEST THE SYSTEM FOR PROPER FUNCTION. DO NOT RE-PULL USED CONDUCTORS UNLESS SPECIFIED.

8. WHERE EQUIPMENT IS BEING RE-FED FROM A NEW SOURCE, EXISTING CONDUIT MAY BE REUSED ONLY IF THE CONDUIT AND FITTINGS ARE OF THE TYPE SPECIFIED FOR NEW WORK ON THIS CONTRACT. IF NOT, THE CONDUIT AND CONDUCTORS SHALL BE REPLACED WITH NEW MATERIAL MEETING THE SPECIFICATIONS, AT NO ADDITIONAL COST TO THE OWNER.

9. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER/ENGINEER TO FLAG EXISTING UNDERGROUND CONDUITS BEFORE DIGGING.

10. THE OWNER HAS THE RIGHT OF FIRST REFUSAL TO THE EQUIPMENT BEING REMOVED. THE CONTRACTOR SHALL DELIVER THE EQUIPMENT WHICH THE OWNER WISHES TO KEEP AT A LOCATION DESIGNATED BY THE OWNER. SEE SPECIFICATIONS.

11. DO NOT MAKE ANY MODIFICATIONS TO THE EXISTING ELECTRICAL EQUIPMENT UNTIL THE FOLLOWING HAS BEEN DONE:

    A. THE OWNER/CONTRACTOR SHALL WITNESS AND RECORD THE CONDITION OF THE EXISTING EQUIPMENT, THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.

    B. THE OWNER SHALL OPERATE THE EQUIPMENT TO DEMONSTRATE THE CURRENT CONDITIONS. THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.

    C. A WRITTEN AND PHOTOGRAPHIC RECORD OF THE OPERATION AND EXISTING CONDITION SHALL BE KEPT IN A THREE RING BINDER AT THE OWNER/CONTRACTOR TRAILER, IN FORM OF PICTURES AND INFORMATION.

    D. A FORM SHALL BE GENERATED BY THE CONTRACTOR TO RECORD THE OBSERVATIONS. BOTH PARTIES SHALL SIGN ON THE FORM.

    E. REPLACE ALL MATERIAL OR EQUIPMENT DAMAGED DURING THE COURSE OF WORK.

    F. AFTER THE CHANGES ARE MADE, THE EQUIPMENT SHALL BE INSPECTED AND RE-TESTED TO DEMONSTRATE THAT IT FUNCTIONS CORRECTLY.

    G. NO PORTION OF EXISTING CONDUCTORS SHALL BE SPLICED TO NEW CONDUCTORS FOR RE-USE WITHOUT SPECIFIC APPROVAL FROM THE OWNER/ENGINEER ON A CASE-BY-CASE BASIS.

MCC, CONTROL PANELS, PANELBOARDS

THESE NOTES APPLY TO CONTROL PANELS, MCC ETC WHICH HAS TO BE REFURBISHED, MODIFIED, DISCONNECTED & RECONNECTED OR REWORKED. SEE SECTION 16060:

THE CONTRACTOR SHALL NOT MAKE ANY MODIFICATION UNTIL THE FOLLOWING HAS BEEN DONE:

A. THE OWNER/CONTRACTOR SHALL WITNESS THE CONDITION OF THE EXISTING EQUIPMENT, THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCY.

B. THE OWNER SHALL OPERATE THE EQUIPMENT TO DEMONSTRATE THE CURRENT CONDITIONS. THE CONTRACTOR SHALL NOTE DOWN ANY DEFECTS OR DEFICIENCIES.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

ELECTRICAL
GENERAL NOTES

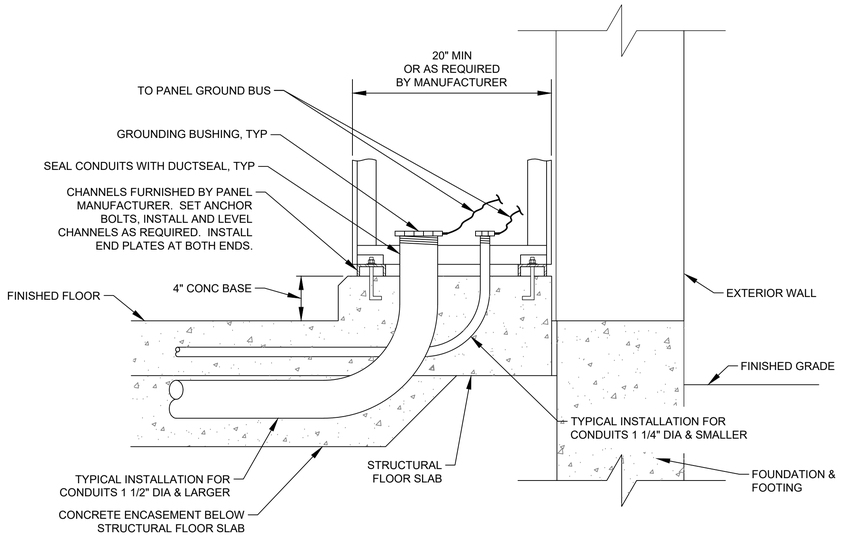
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

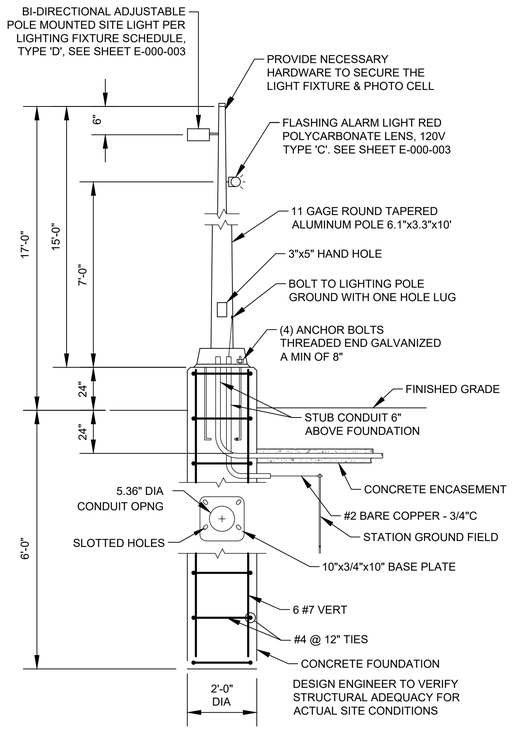
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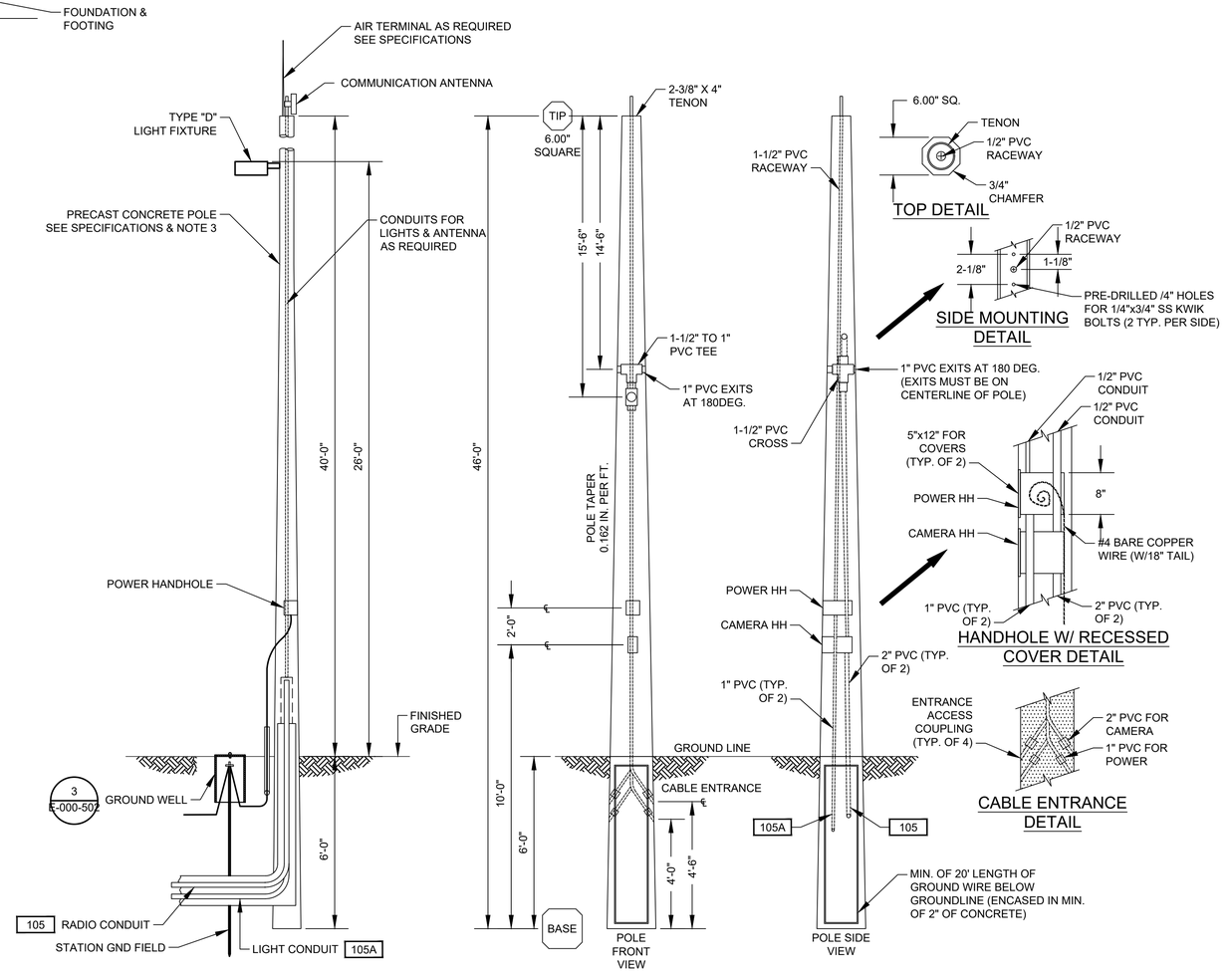
TYPICAL MCC & CONTROL PANEL INSTALLATION & CONDUIT ENTRY

DETAIL 14
NTS -



TYPICAL YARD LIGHT

DETAIL 13
NTS -



COMMUNICATION POLE MOUNTING DETAIL

DETAIL 15
NTS -

NOTES:

1. ON GROUND WIRE TERMINATION'S, ALL PAINTED OR COATED METAL SURFACES SHALL BE REMOVED AND CLEANED TO BARE METAL. TO OBTAIN A SOUND GROUND CONNECTION. ONCE INSTALLED APPLY PROTECTIVE COATING ON BARE METAL AREAS PER MANUFACTURER REQUIREMENTS.
2. PRECAST CONCRETE POLE TO MOUNT THE RADIO RECEIVER.
3. 1" CONDUIT TO EXTEND TO THE TOP OF POLE FOR ETHERNET CABLE FOR RADIO.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

ELECTRICAL
YARD LIGHT/COMM.
POLE DETAILS

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

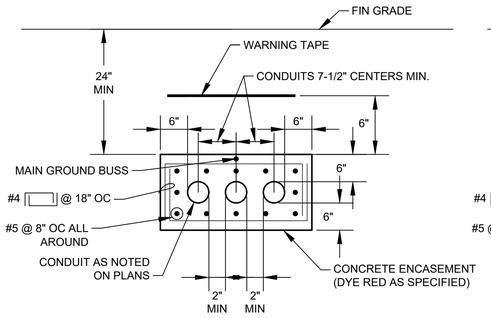
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

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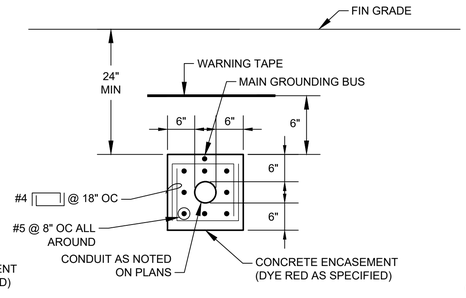
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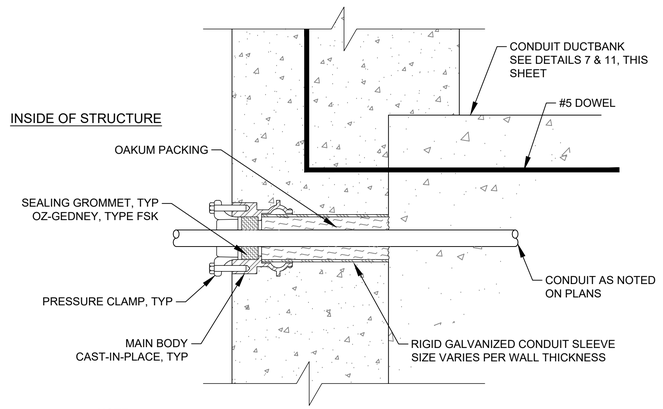
TYP MULTI-CONDUIT DUCTBANK SECTION

NOTE: TIE MAIN GROUNDING BUS TO REBAR AT A MAXIMUM INTERVAL OF EVERY 20 FEET.

DETAIL 1 / - NTS



TYP SINGLE-CONDUIT DUCTBANK SECTION

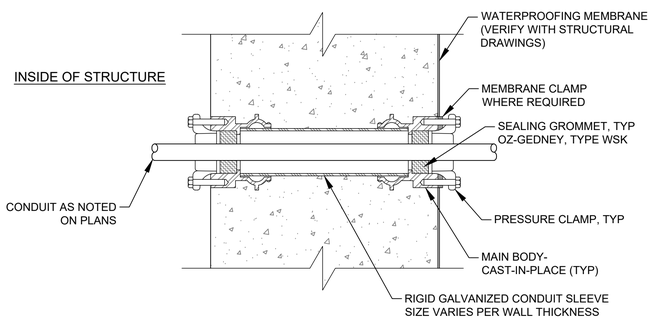


NOTE:

WALL SEAL SHOWN IS TYPICAL FOR EACH CONDUIT IN DUCTBANK.

SINGLE ENDED TYPE

FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

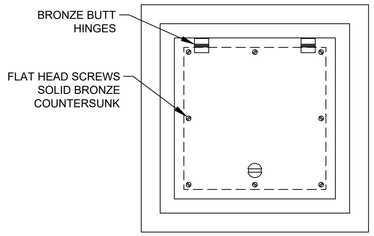


DOUBLE ENDED TYPE WITH MEMBRANE

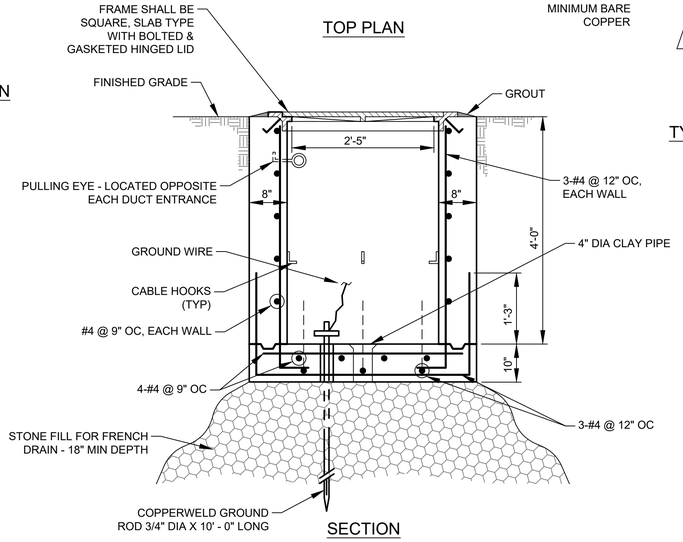
FOR USE WHERE CONDUIT OUTSIDE THE STRUCTURE IS ENCASED IN CONCRETE

TYPICAL CONDUIT SEALS

DETAIL 4 / - NTS



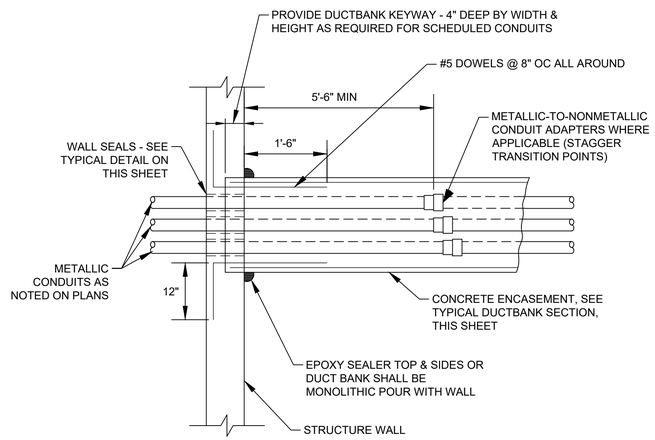
TOP PLAN



SECTION

TYPICAL ELECTRICAL HANDHOLE CONSTRUCTION

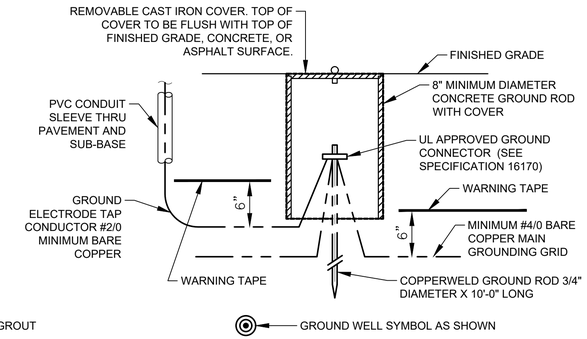
DETAIL 2 / - NTS



PLAN

TYPICAL DUCTBANK ENTRANCE AT STRUCTURE WALL

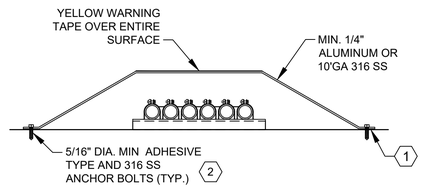
DETAIL 5 / - NTS



TYPICAL GROUND ROD AND WELL INSTALLATION

DETAIL 3 / - NTS

GROUND CONNECTOR SCHEDULE	
WIRE SIZE	BURNDY
#2 AWG	GAR 6426
#2/0 AWG	GAR 6426
#4/0 AWG	GAR 6429
500 kcmil	GAR 6434



CONDUIT COVER

DETAIL 6 / - NOT TO SCALE

NOTES BY SYMBOL "⟨#⟩":

1. PROVIDE 1/8" NEOPRENE GASKET WHERE ALUMINUM IS SELECTED. DO NOT ALLOW ALUMINUM TO COME INTO DIRECT CONTACT WITH CONCRETE.
2. PROVIDE THE CORRECT SIZE ANCHOR BOLTS BASED ON LOAD.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

ELECTRICAL
TYPICAL DETAILS

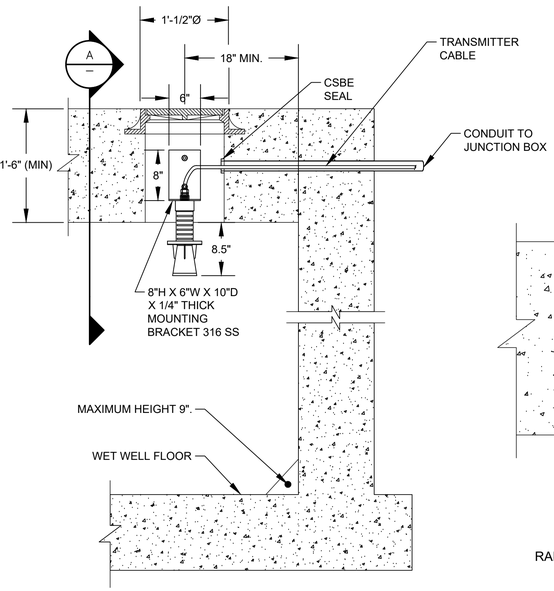
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

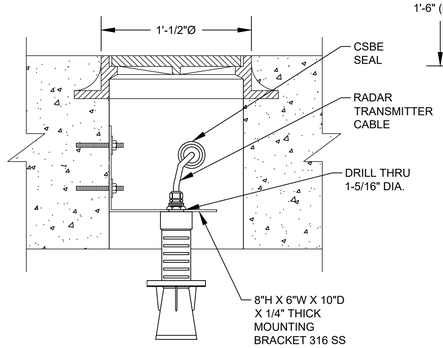
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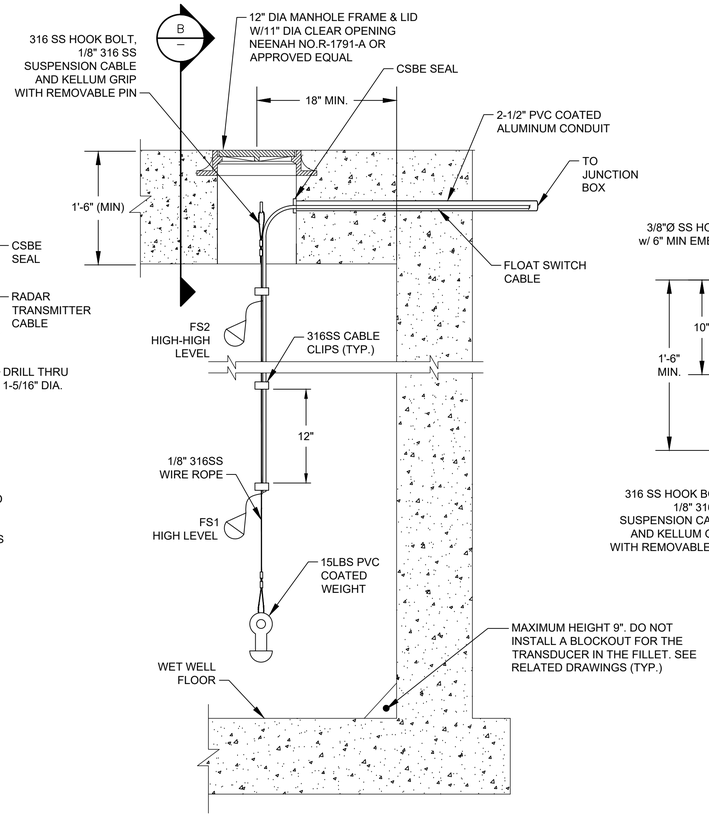
RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 1
NTS
(SEE NOTE 1, 2, 4 & 5)



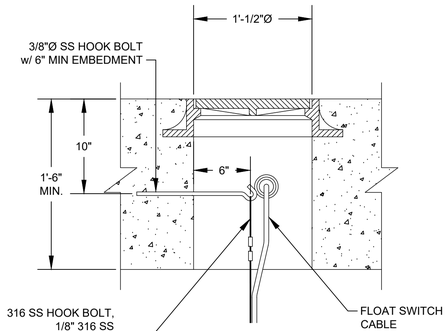
RADAR LEVEL TRANSMITTER MOUNTING
TYP. LT-1 & LT-2

SECTION 2
NTS
(SEE NOTE 1, 2, 4 & 5)



FLOAT SWITCH MOUNTING

DETAIL 3
NTS
(SEE NOTES 3, 4 & 5)

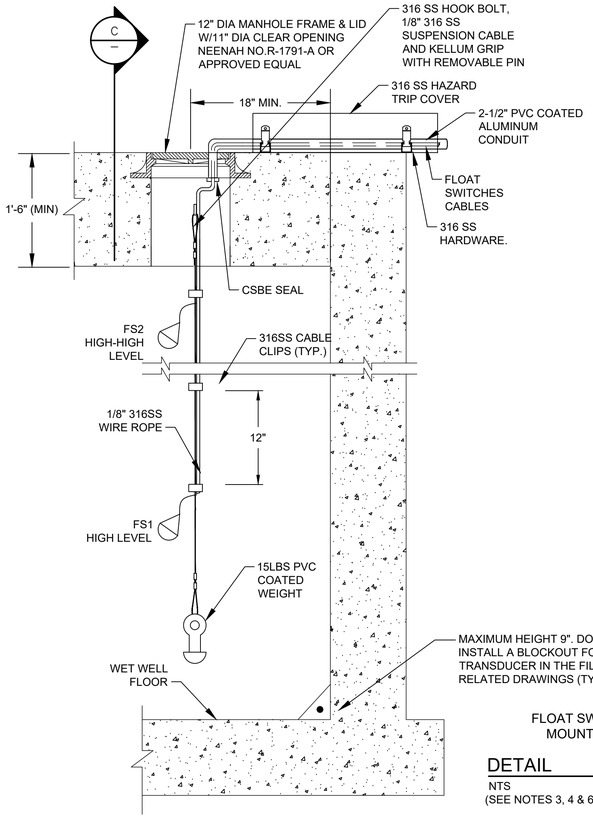


4
FLOAT SWITCH MOUNTING

SECTION 4
NTS
(SEE NOTES 3, 4 & 5)

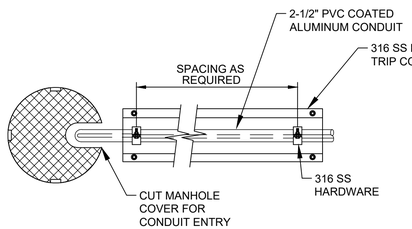
NOTES:

1. NEW RADAR LEVEL TRANSMITTERS FOR LT-1, LT-2.
2. NEW MANHOLES FOR RADAR LEVEL TRANSMITTERS LT-1, LT-2.
3. NEW MANHOLE FOR FLOAT SWITCHES.
4. PAINT MANHOLE LIDS AND HATCHES HUNTER GREEN.
5. NEW MANHOLE INSTALLATION.
6. RETROFIT MANHOLE INSTALLATION.
7. INSIDE WET WELL IS CLASSIFIED AS CLASS I, DIVISION 1. OUTSIDE WET WELL WITHIN 5 FEET OF WET WELL OPENINGS ARE CLASSIFIED AS CLASS I, DIVISION 2.



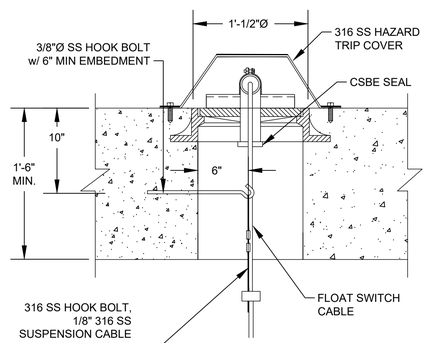
FLOAT SWITCH MOUNTING

DETAIL 5
NTS
(SEE NOTES 3, 4 & 6)



FLOAT SWITCH MOUNTING
TOP VIEW

DETAIL 6
NTS
(SEE NOTES 3, 4 & 6)



FLOAT SWITCH
MOUNTING

SECTION 7
NTS
(SEE NOTES 3, 4 & 6)

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

GENERAL

ELECTRICAL
RADAR LEVEL TRANSMITTER
GAUGING SYSTEM INSTALLATION
& DETAILS-I

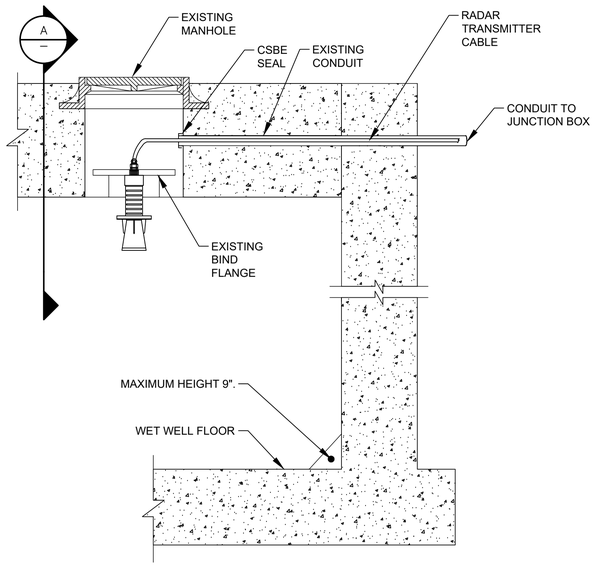
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-007
HORIZ: NONE
VERT: NONE
SHEET NO. 112 OF 225
DRAWING SCALE
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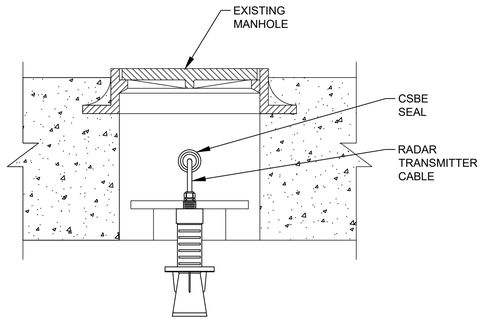
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RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 8
NTS

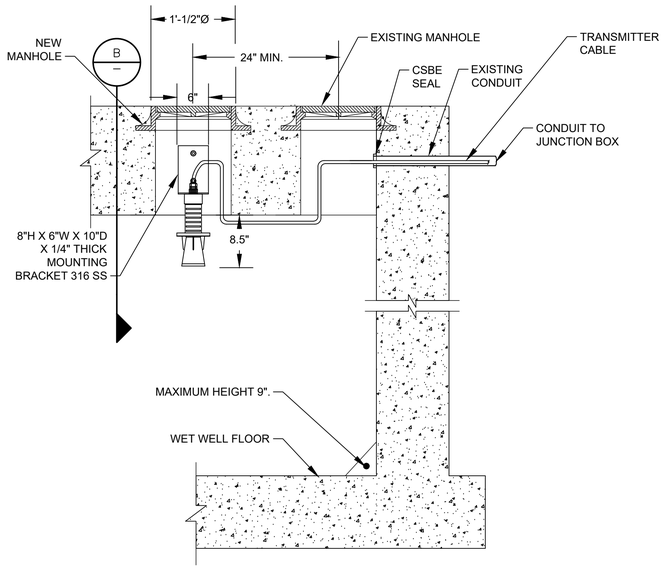
(SEE NOTES 1, 2, 4, 6 & 7)



RADAR LEVEL TRANSMITTER MOUNTING
TYP. LT-1 & LT-2

SECTION 9
NTS

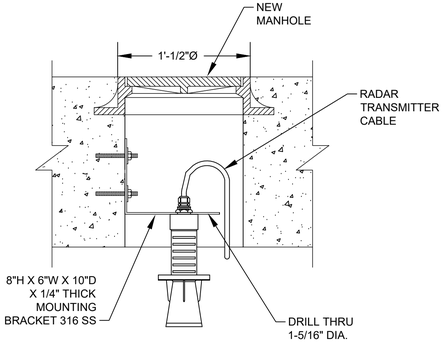
(SEE NOTES 1, 2, 4, 6 & 7)



RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 10
NTS

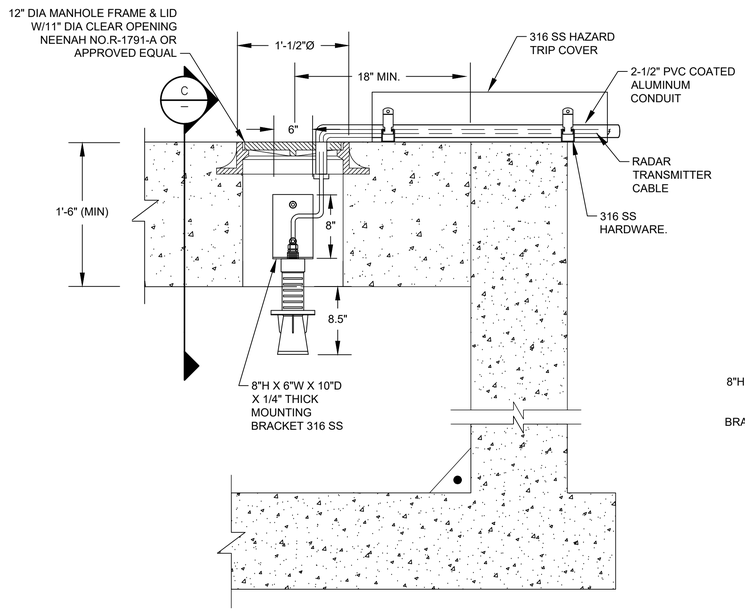
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RADAR LEVEL TRANSMITTER MOUNTING
TYP. LT-1 & LT-2

SECTION 12
NTS

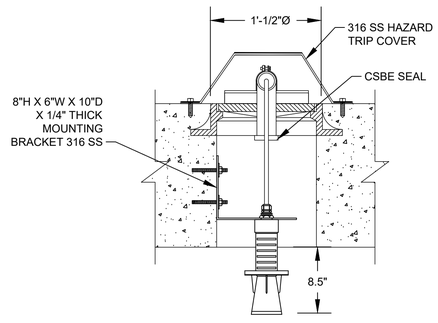
(SEE NOTES 1, 3, 4, 5, 6 & 8)



RADAR LEVEL TRANSMITTER MOUNTING
(TYP. LT-1, LT-2)

DETAIL 11
NTS

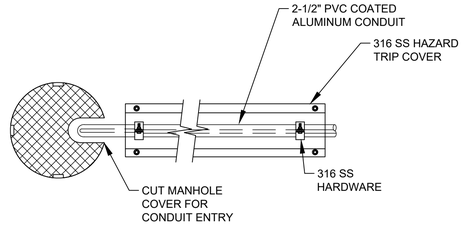
(SEE NOTES 1, 4, 5 & 6)



RADAR LEVEL TRANSMITTER MOUNTING
TYP. LT-1 & LT-2

SECTION 13
NTS

(SEE NOTES 1, 4, 5 & 6)



FLOAT SWITCH MOUNTING
TOP VIEW

DETAIL 14
NTS

(SEE NOTES 1, 4, 5 & 6)

NOTES:

1. NEW RADAR LEVEL TRANSMITTERS FOR LT-1, LT-2.
2. EXISTING AIRCELL MANHOLES FOR RADAR LEVEL TRANSMITTERS LT-1, LT-2.
3. EXISTING SUBMERSIBLE TRANSDUCER MANHOLES FOR RADAR LEVEL TRANSMITTERS LT-1, LT-2.
4. PAINT MANHOLE LIDS AND HATCHES HUNTER GREEN.
5. NEW MANHOLE INSTALLATION.
6. RETROFIT MANHOLE INSTALLATION.
7. DEMOLISH ALL EQUIPMENT ASSOCIATED WITH AIRCELL INSIDE THE WETWELL.
8. DEMOLISH ALL EQUIPMENT ASSOCIATED WITH SUBMERSIBLE LEVEL TRANSDUCER INSIDE THE WETWELL.
9. INSIDE WET WELL IS CLASSIFIED AS CLASS I, DIVISION 1. OUTSIDE WET WELL WITHIN 5 FEET OF WET WELL OPENINGS ARE CLASSIFIED AS CLASS I, DIVISION 2.

NO.	DATE	REVISION	APP.
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

ELECTRICAL
RADAR LEVEL TRANSMITTER
GAUGING SYSTEM INSTALLATION
& DETAILS-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GE-008
HORIZ: NONE
VERT: NONE
SHEET NO. 113 OF 225
DRAWING SCALE
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PRIMARY FLOW ELEMENTS

	MAGNETIC FLOW METER
	ULTRASONIC DOPPLER FLOW METER
	ULTRASONIC TIME TRANSIT FLOW METER
	VORTEX FLOW METER
	VENTURI TUBE
	TURBINE OR PROPELLER TYPE METER
	ROTAMETER
	PITOT TUBE
	WEIR FLOW METER
	PARSHALL FLUME OR TRAPEZOIDAL FLUME
	ORIFICE PLATE
	THERMAL MASS FLOWMETER

PRIMARY LEVEL ELEMENTS

	ULTRASONIC LEVEL TRANSDUCER
	RADAR LEVEL TRANSDUCER
	PRIMARY ELEMENT PRESSURE PROBE LEVEL TRANSMITTER
	BUBBLER LEVEL TUBE ELEMENT
	CONDUCTIVE LEVEL PROBE
	FLOAT SWITCH

VALVES

	VALVE - OTHER IN-LINE TYPE NOT OTHERWISE IDENTIFIED
	THREE-WAY VALVE
	BALL VALVE
	GLOBE VALVE
	PINCH VALVE
	GATE VALVE
	NEEDLE VALVE
	DIAPHRAGM VALVE
	BUTTERFLY VALVE
	CHECK VALVE WITH FLOW DIRECTION
	PLUG VALVE
	PRESSURE-REDUCING REGULATOR INTERNAL PRESSURE TAP
	BACK PRESSURE REGULATOR INTERNAL PRESSURE TAP
	PRESSURE-REDUCING REGULATOR EXTERNAL PRESSURE TAP
	BACK PRESSURE REGULATOR EXTERNAL PRESSURE TAP

VALVES

S	SOLENOID ACTUATED VALVE
	"X": P AIR CYLINDER; O OIL CYLINDER; H HYDRAULIC CYLINDER; E ELECTRIC MOTOR; S SOLENOID VALVE
OR NO SYMBOL	MANUAL VALVE

MISC PROCESS SYMBOLS

	ANNULAR TYPE SEAL
	CHEMICAL INJECTION POINT
	STRAINER
	DRAIN
	NORMAL OPERATING LEVEL
UV	UV CHAMBER
	FLOW STRAIGHTENER
	LOAD CELL
	SPRAY NOZZLE
	BLIND FLANGE
	FLANGE
	DIAPHRAGM SEAL
	PRESSURE RELIEF (OUT)
	VACUUM RELIEF (IN)

GATES

	SLUICE/SLIDE GATE
	FLOW CONTROL GATE

MOTORS

M	VARIABLE SPEED MOTOR
M	CONSTANT SPEED MOTOR

PUMPS, BLOWERS AND MISC EQUIPMENT

	CENTRIFUGAL BLOWER
	CENTRIFUGAL PUMP
	DIAPHRAGM PUMP AND MOTOR
	PROGRESSIVE CAVITY PUMP
	SUBMERSIBLE PUMP
	POSITIVE DISPLACEMENT BLOWER

PUMPS, BLOWERS AND MISC EQUIPMENT

	MIXER/FLOCCULATOR/AERATOR
	VERTICAL PUMP-1 USED WHEN DISCHARGE LINE IS IN WETWELL
	VERTICAL PUMP-2 USED WHEN DISCHARGE LINE IS EXPOSED.
	VERTICAL PUMP SHAFT USED WHEN INTAKE OF PUMP IS ENCASED.
	SUBMERSIBLE MIXER
	COMPRESSOR
	HEAT EXCHANGER
	FEED PUMP
	GRINDER/MACERATOR
	METERING PUMP
	PLUNGER PUMP
	PERISTALTIC METERING PUMP
	CENTRIFUGE
	PULSATION DAMPENER
	TURBO BLOWER

PUMPS, BLOWERS AND MISC EQUIPMENT

	ROTARY SCREEN

CONTROL ENCLOSURE, INSTRUMENTS AND SCADA

XXX / P AAA YY / BBB CCC D / ZZZ	DIGITAL/ANALOG INSTRUMENT AAA ISA TAG (REFER TO TABLE) BBB LOOP NUMBER CCC LOOP NUMBER SUB D DIVISION NUMBER P POWER REQUIREMENT XXX DESCRIPTION (USED ON PANEL INSTRUMENTS) YY CHEMICAL ZZZ LOCATION DIGITAL/ANALOG INSTRUMENT -LOCATED IN THE FIELD -NOT INSIDE OF PANEL -VISIBLE AT FIELD LOCATION -NORMALLY OPERATOR ACCESSIBLE
XXX / P AAA YY / BBB CCC D / ZZZ	DIGITAL/ANALOG INSTRUMENT -LOCATED ON PANEL -VISIBLE TO OPERATOR -NORMALLY OPERATOR ACCESSIBLE
XXX / P AAA YY / BBB CCC D / ZZZ	DIGITAL/ANALOG INSTRUMENT -LOCATED INSIDE PANEL -NOT VISIBLE TO OPERATOR -NORMALLY NOT ACCESSIBLE
XXX / AAA / BBB CCC	DISPLAY (INDICATION/CONTROLLER) AAA ISA TAG (REFER TO TABLE) BBB LOOP NUMBER CCC LOOP NUMBER SUB XXX DESCRIPTION DISPLAY (INDICATION/CONTROLLER) -LOCATED IN THE FIELD -NOT INSIDE OF PANEL -VISIBLE AT FIELD LOCATION -NORMALLY OPERATOR ACCESSIBLE
XXX / AAA / BBB CCC	DISPLAY (INDICATION/CONTROLLER) -LOCATED ON PANEL -VISIBLE TO OPERATOR -NORMALLY OPERATOR ACCESSIBLE
XXX / AAA / BBB CCC	DISPLAY (INDICATION/CONTROLLER) -LOCATED INSIDE PANEL -NOT VISIBLE TO OPERATOR -NORMALLY NOT ACCESSIBLE
	INTERLOCKING RELAY

CONTROL ENCLOSURE AND SCADA

	DIGITAL INPUT
	DIGITAL OUTPUT
	ANALOG INPUT
	ANALOG OUTPUT
	SURGE SUPPRESSOR
	OPTO ISOLATOR
	SIGNAL CONVERTER/ ISOLATOR */* - (INPUT/OUTPUT) * DEFINED AS FOLLOWS: E - VOLTAGE I - CURRENT P - PNEUMATIC PD - PULSE DURATION H - HYDRAULIC O - ELECTROMAGNETIC, SONIC R - RESISTANCE (ELECTRIC)

CONTROL ENCLOSURE, INSTRUMENTS AND SCADA

F(X)	PLC/RTU LOGIC FUNCTION SYMBOLS AND ABBREVIATIONS K PROPORTIONAL GAIN OR ATTENUATE (INPUT:OUTPUT) - K REVERSE PROPORTIONAL GAIN OR ATTENUATE (INPUT:OUTPUT) Σ SUMMING Σ/n AVERAGING Δ SUBTRACTING √ EXTRACT SQUARE ROOT ÷ DIVIDE X MULTIPLY S INTEGRATE + BIAS POSITIVE - BIAS NEGATIVE F(x) NONLINEAR OR UNSPECIFIED FUNCTION > HIGH SELECT < LOW SELECT ⊦ HIGH LIMIT ⊣ LOW LIMIT

INSTRUMENT (COMMON HOUSING)	INSTRUMENT (SEPERATOR HOUSING)	INSTRUMENT (PART OF MAJOR EQUIPMENT)

GENERAL NOTES:

1. THIS IS A GENERAL LEGEND SHEET, SOME SYMBOLS AND ABBREVIATIONS MAY NOT APPLY TO THIS SPECIFIC PROJECT.
2. THIS LEGEND APPLIES TO INSTRUMENTATION DIAGRAMS ONLY AND MAY DIFFER FROM LEGENDS FOR OTHER SHEETS.
3. IN GENERAL THIS LEGEND SHEET AND THE INSTRUMENTATION DIAGRAMS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION, STANDARDS FOR PRACTICES FOR INSTRUMENTATION, STANDARD S5.1 SOME MODIFICATIONS, ADDITIONS AND ALTERATIONS HAVE BEEN MADE AS REQUIRED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
4. SOME PROCESS ITEMS, SUCH AS EQUIPMENT ISOLATION VALVES, BYPASS LINES, ETC., WHICH ARE NOT CRITICAL FOR AN UNDERSTANDING OF THE INSTRUMENTATION AND CONTROL FUNCTIONS ARE NOT SHOWN ON THE INSTRUMENTATION SHEETS.
5. SEE ELECTRICAL SHEETS AND SPECIFICATIONS FOR ADDITIONAL CONTROL AND INTERLOCK REQUIREMENTS FOR EQUIPMENT NOT SHOWN OR NOT PROVIDED BY THE INSTRUMENTATION SUPPLIER.
6. IN THE EVENT OF DISCREPANCY BETWEEN THE PROCESS & INSTRUMENTATION DIAGRAMS AND THE LOOP DIAGRAMS, THE INFORMATION FROM THE LOOP DIAGRAMS SHALL BE USED.

HAND SWITCH ABBREVIATIONS:

HOA	HAND/OFF/AUTO
HOR	HAND/OFF/REMOTE
LOC	LOCAL/OFF/COMPUTER
LOR	LOCAL/OFF/REMOTE
LOS	LOCKOUT STOP
OSC	OPEN/STOP/CLOSE
RSL	RAISE/STOP/LOWER
L/C	LOCAL/COMPUTER
L/R	LOCAL/REMOTE
O/C	OPEN/CLOSE
S/S	START/STOP
A/M	AUTO/MANUAL
H/C	HAND/COMPUTER
PB	PUSHBUTTON

GENERAL NOTE

THIS IS A STANDARD LEGEND. SOME SYMBOLS MAY NOT APPEAR ON THE DRAWINGS.

NO	DATE	REVISION	APP.

PEN TABLE: ----

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

INSTRUMENTATION LEGENDS & SYMBOLS-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GI-001

HORIZ: NONE

VERT: NONE

SHEET NO. 114 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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LINE SYMBOLS

	MAJOR PROCESS LINE
	MINOR PROCESS LINE
	FUTURE PROCESS LINE
	EXISTING PROCESS LINE
	HARDWIRED SIGNAL
	SOFT LINK
	HYDRAULIC LINK
	PNEUMATIC LINK
	CAPILLARY TUBE OR FILLED SYSTEM SIGNAL
	ELECTROMAGNET OR SONIC SIGNAL (GUIDED)
DESCRIPTION X SHEET# Y	(USED WHEN REFERRING TO A SHEET IN THE DESIGN SET) DESCRIPTION - WHERE FLOW IS GOING SHEET# - WHAT SHEET PROCESS CONTINUES ON X - USED WHEN TWO OR MORE ARROWS ARE REFERING TO THE SAME SHEET. Y - USED WHEN TWO OR MORE ARROWS ARE REFERRING TO THE SAME SHEET.
DESCRIPTION	(USED WHEN REFERRING TO A SHEET NOT IN THE DESIGN SET) DESCRIPTION - WHERE FLOW IS GOING
CAT5e CAT5e	CAT-5e ETHERNET CABLE
CAT6 CAT6	CAT-6 ETHERNET CABLE
- -	MODBUS PLUS CABLE
--	RS-485 CABLE
RS-232 RS-232	RS-232 CABLE
POE POE	POWER OVER ETHERNET CABLE
T1 T1	T1 FIBER CONNECTION
FO FO	NON-SPECIFIC FIBER OPTIC CABLE
100 100	FIBER 100BASE-FX
1000 1000	FIBER 1000BASE-FX
	SIGNAL CROSSING
	PROCESS LINE CROSSING
	PROCESS LINE/ HARDWIRE SIGNAL CROSSING

EQUIPMENT/LOOP TAGGING

X	EQUIPMENT TAG USED TO IDENTIFY NON-INSTRUMENT EQUIPMENT
X	LOOP TAG USED TO TIE THE PROCESS FLOW DIAGRAM TO A LOOP DIAGRAM

STANDARD VALVE AND PIPING USAGE

PDIT 1	BLOCK/BLEED VALVE ARRANGEMENT
PI 1	INSTRUMENTS WITH VALVE ONLY
PI 1	INSTRUMENTS WITH DIAPHRAGM SEAL
PI 1	INSTRUMENTS WITH ANNULAR SEAL

PANEL DETAIL SYMBOLS

RUN	INDICATING LIGHT -R RED (ACTIVE EQUIPMENT) -G GREEN (EQUIPMENT OFF) -W WHITE (POWER) -B BLUE (CONDITION IE BACKWASH IN PROGRESS) -A AMBER (ALARM CONDITION)
H/O/A	SWITCH -L/R (LOCAL - REMOTE) -L/O/A (LOCAL - OFF - AUTO) -L/O/R (LOCAL - OFF - REMOTE) -H/O/A (HAND - OFF - AUTO) -H/O/R (HAND - OFF - REMOTE)
START	PUSHBUTTON
START	PUSHBUTTON
	HORN
	BEACON
OIT	OPERATOR INTERFACE TERMINAL

SECURITY SYSTEM SYMBOLS

CCTV	CLOSED CIRCUIT TELEVISION CAMERA
PTZ	PAN, TILT, ZOOM CAMERA

GENERAL ABBREVIATIONS

AI	ANALOG INPUT
AL	ALARM PILOT LIGHT
AO	ANALOG OUTPUT
AS	AIR SUPPLY
ASP	APPLICATION SERVICE PROVIDER
BFV	BUTTERFLY VALVE
CCTV	CLOSED CIRCUIT TELEVISION
CH4	METHANE
CL2	CHLORINE
COND	CONDUCTIVITY
COMP	COMPUTER
CP	CONTROL PANEL
CPU	CENTRAL PROCESSING UNIT
CRC	CONTROL ROOM CONSOLE
CTU	CENTRAL TELEMETRY UNIT
DCU	DISTRIBUTED CONTROL UNIT
DI	DIGITAL OR DISCRETE INPUT
DO	DISSOLVED OXYGEN OR DIGITAL OUTPUT
DPU	DISTRIBUTED PROCESSING UNIT
EPP	ETHERNET PATCH PANEL
ES	EMERGENCY STOP
ESW	ETHERNET SWITCH
ETM	ELAPSED TIME METER
FC	FAIL CLOSED
FCP	FIELD CONTROL PANEL
FCS	FILTER CONTROL STATION
FCV	FLOW CONTROL VALVE
FLP	FAIL LAST POSITION
FO	FAIL OPEN
FOPP	FIBER OPTIC PATCH PANEL
FPR	FEEDER PROTECTION RELAY
H2S	HYDROGEN SULFIDE
HMI	HUMAN MACHINE INTERFACE
JB	JUNCTION BOX
IO	INPUT/OUTPUT
IR	INFARED
LAS	LIQUID AMMONIA SULFATE
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LT	LEVEL TRANSMITTER
LPU	LOCAL PROCESSING UNIT
LTS	LOCAL TERMINAL SYSTEM
MC	MOTOR CONTROLLER
NAOCL	SODIUM HYPOCHLORIDE
NC	NORMALLY CLOSED
NH3	AMMONIA
NIM	NETWORK INTERFACE MODULE
NO	NORMALLY OPEN
MCC	MOTOR CONTROL CENTER
MM	MULTI MODE FIBER OPTIC CABLE
MPR	MOTOR PROTECTION RELAY
OIT	OPERATIONS INTERFACE TERMINAL
OL	OVERLOAD
OWS	OPERATOR WORKSTATION
PB	PUSH BUTTON
PCSI	PROCESS CONTROL SYSTEM INTEGRATOR
pH	HYDROGEN ION
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMCS	PROCESS MONITORING CONTROL SYSTEM
POLY	POLYMER
PQM	POWER QUALITY METER
PS	POWER SUPPLY
PSU	POWER SUPPLY UNIT
PV	PINCH VALVE
RBC	REMOTE BASE CONTROLLER
RIO	REMOTE INPUT OUTPUT
RTU	REMOTE TERMINAL UNIT
SCADA	SUPERVISORY CONTROL AND DATA AQUISITION
SM	SINGLE MODE FIBER OPTIC CABLE
SO2	SULFUR DIOXIDE
SOL	SOLENOID
SPD	SURGE PROTECTION DEVICE
UPS	UNINTERRUPTIBLE POWER SUPPLY
TC	TERMINATION CABINET
TURB	TURBIDITY
VIB	VIBRATION
VFD	VARIABLE FREQUENCY DRIVE
VLV	VALVE

MEANINGS OF IDENTIFICATION LETTERS

THIS TABLE APPLIES ONLY TO THE FUNCTIONAL IDENTIFICATION OF INSTRUMENTS.

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS/ANALYTICAL		ALARM		
B	BURNER, COMBUSTION			CLOSE, STOP, DECREASE (1)	
C	CONDUCTIVITY			CONTROL	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL		OPEN START, INCREASE (1)	
E	VOLTAGE (EMF)		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			FAIL (1)
G	GAUGING (DIMENSIONAL)		GLASS VIEWING DEVICE		
H	HAND				HIGH OR OPEN
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE	TIME RATE OR CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW OR CLOSED
M	MOISTURE, HUMIDITY, MOTOR, MOTION	MOMENTARY		MOTOR (1)	MIDDLE OR INTERMEDIATE
N	USERS CHOICE		USER'S CHOICE		ON OR OPERATE (1)
O	USER'S CHOICE		ORIFICE (RESTRICTION)		OVERLOAD (1)
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)	PUMP (1)	
Q	QUANTITY (2)	INTEGRATE OR TOTALIZE			
R	RADIATION		RECORD		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (2)		MULTIFUNCTION (2)	MULTIFUNCTION (2)	MULTIFUNCTION (2)
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		UNCLASSIFIED (2)
X	UNCLASSIFIED (2)	X AXIS	UNCLASSIFIED (2)	UNCLASSIFIED (2)	UNCLASSIFIED (2)
Y	EVENT, STATE, PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

COMMON HMI/INSTRUMENT ISA TAGGING

ABBREVIATION	MEANING
AIT	ANALYTICAL INDICATING TRANSMITTER
AE	ANALYTICAL ELEMENT
AI	CHEMICAL RESIDUAL/INDICATION
CT	CYCLE TIMER
FIT	FLOW INDICATING TRANSMITTER
FE	FLOW ELEMENT
FI	FLOW INDICATION
FS	FLOAT SWITCH
HS	HAND SWITCH
JAL	POWER ALARM LOW
II	CURRENT INDICATION
LIT	LEVEL INDICATING TRANSMITTER
LE	LEVEL ELEMENT
LI	LEVEL INDICATION
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LAL	LEVEL ALARM LOW
LAH	LEVEL ALARM HIGH
PIT	PRESSURE INDICATING TRANSMITTER
PE	PRESSURE ELEMENT
PI	PRESSURE INDICATION
PPU	PERPETUAL POWER UNIT
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
SI	SPEED INDICATION
SIC	SPEED INDICATING CONTROLLER
TIT	TEMPERATURE INDICATING TRANSMITTER
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATION
TSH	TEMPERATURE SWITCH HIGH
WIT	WEIGHT INDICATING TRANSMITTER
WE	WEIGHT ELEMENT
WI	WEIGHT INDICATION
XA	FAULT ANNUNCIATION
YL	MISC. EVENT LIGHT (IN REMOTE)

COMMON HMI/INSTRUMENT ISA TAGGING

ABBREVIATION	MEANING
ZCH	OPEN GATE/VALVE
ZCL	CLOSE GATE/VALVE
ZSH	POSITION SWITCH HIGH
ZSL	POSITION SWITCH LOW
ZLH	VALVE/GATE OPEN
ZLL	VALVE/GATE CLOSED
ZIT	POSITION INDICATING TRANSMITTER

GENERAL NOTE

THIS IS A STANDARD LEGEND. SOME SYMBOLS MAY NOT APPEAR ON THE DRAWINGS.

NO	DATE	PERMIT SET / REVISION	APP.
1	06/09/2025	PERMIT SET	HF

PLOTTED: 7/23/2025 1:41 PM PEN TABLE: GAI.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

GENERAL

INSTRUMENTATION
LEGENDS & SYMBOLS-II

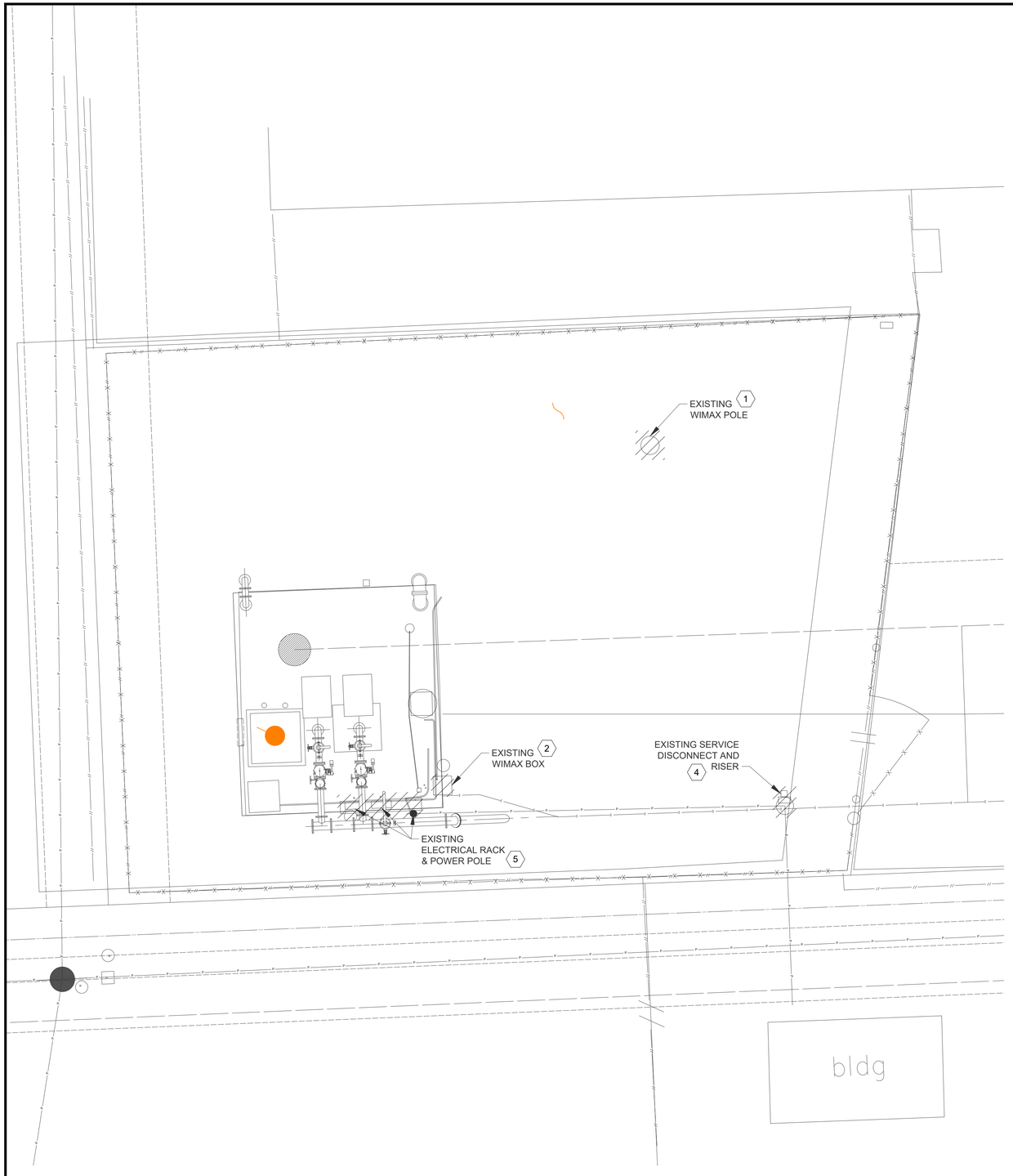
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. GI-002
HORIZ: NONE
VERT: NONE
SHEET NO. 115 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: C:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\GENERAL_GI-002.dwg



CHESTNUT RIDGE
ELECTRICAL EXISTING SITE

PLAN

1"= 5'-0"



EXISTING WIMAX POLE

PHOTOGRAPH A
NTS -



EXISTING SERVICE DISCONNECT AND RISER

PHOTOGRAPH C
NTS -



EXISTING WIMAX BOX

PHOTOGRAPH B
NTS -



EXISTING CONTROL PANEL AND PLC BOX (2ND FLOOR)

PHOTOGRAPH D
NTS -



EXISTING POWER BOXES & POWER PANEL

PHOTOGRAPH E
NTS -



EXISTING POWER POLE & RISER

PHOTOGRAPH F
NTS -



EXISTING DRY PIT LIGHTING (2ND FLOOR)

PHOTOGRAPH G
NTS -

NOTES BY SYMBOL "⟨#⟩":

1. EXISTING WIMAX POLE TO BE DEMOLISHED AND REMOVED.
2. EXISTING WIMAX BOX TO BE DEMOLISHED AND REMOVED.
3. EXISTING POWER BOXES AND PANEL TO BE DEMOLISHED AND REMOVED.
4. EXISTING SERVICE DISCONNECT AND RISER TO BE REMOVED AND REPLACED.
5. EXISTING POWER POLE AND RISER TO BE REMOVED AND REPLACED.

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/5/2025 10:44 AM

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
DEMOLITION SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-101

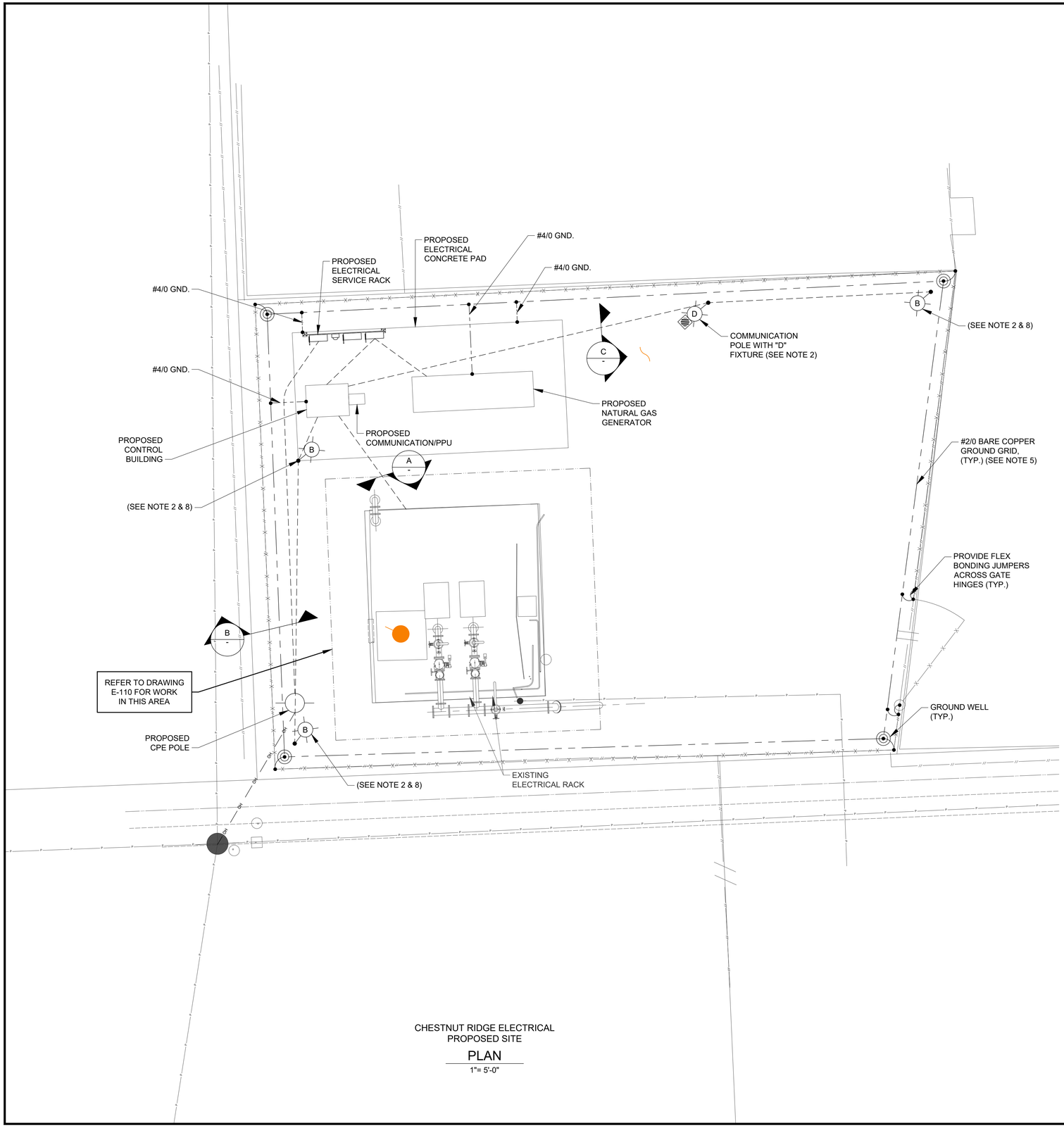
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VERT: 1"=5'-0"

SHEET NO. 116 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

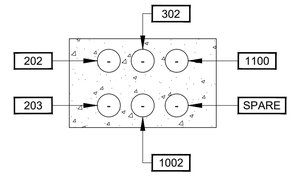
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CHESTNUT RIDGE ELECTRICAL
PROPOSED SITE

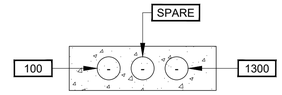
PLAN

1"= 5'-0"



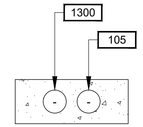
DUCTBANK

SECTION A
NTS --



DUCTBANK

SECTION B
NTS --



DUCTBANK

SECTION C
NTS --

NOTES:

1. THE ELECTRICAL INSTALLATION IN THE WET WELL SHALL BE EXPLOSION PROOF, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE FOR CLASS I, DIVISION 1 LOCATIONS.
2. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. DUSK TO DAWN PHOTOCELL CONTROL.
4. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1. OUTSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.
5. GROUNDING LOOP SHALL BE BURIED 30" BELOW FINISHED GRADE.
6. AREA LIGHTING MOUNTED ON PLATFORM.
7. CONDUIT TO BE INSTALLED BELOW PLATFORM.
8. TYPE "B" FIXTURE TO BE INSTALLED ON THE POLE PROVIDING WIRES FOR THE "B" LIGHT.

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
PROPOSED SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-102

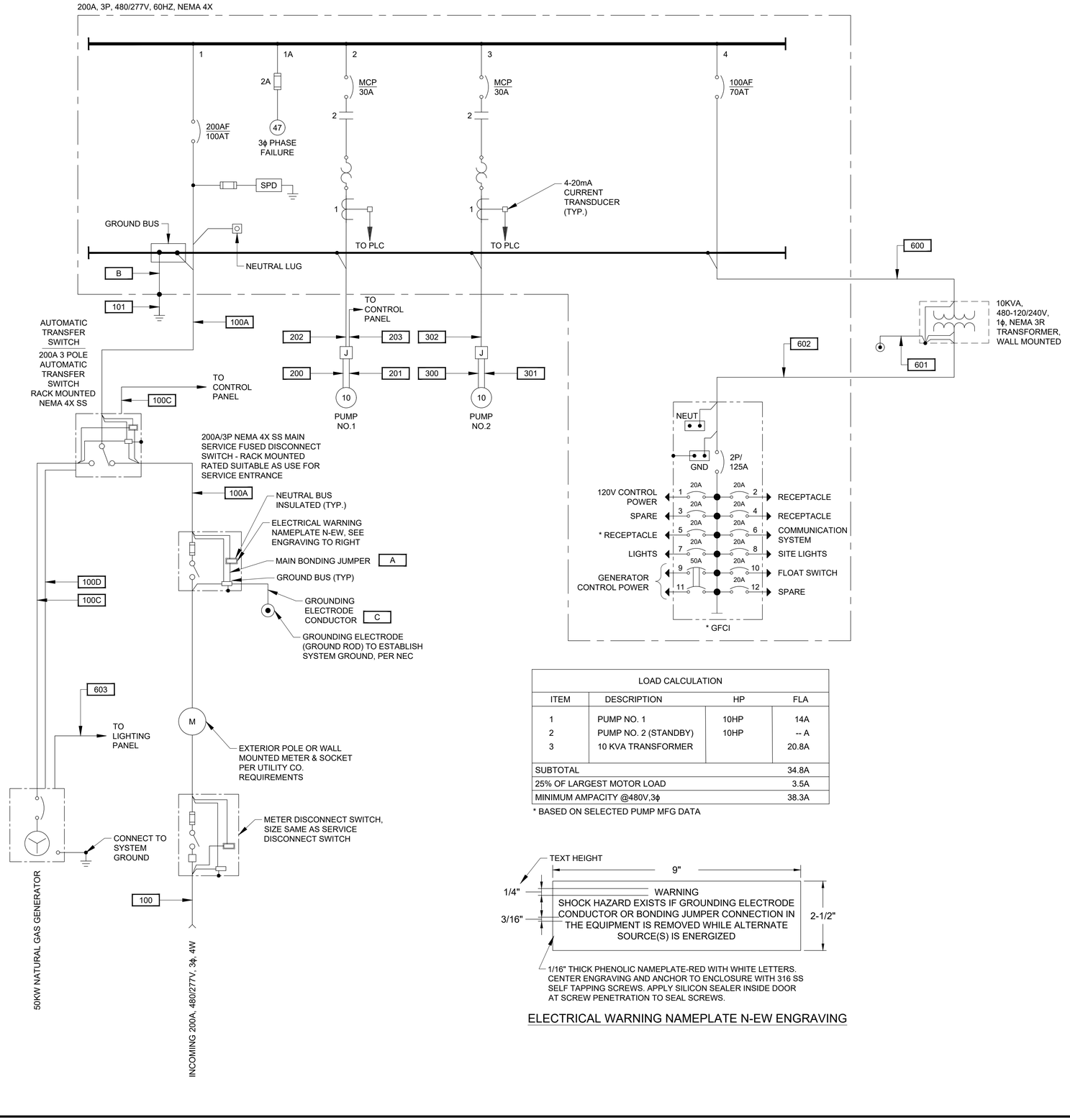
HORIZ: 1"=5'-0"
VERT: 1"=5'-0"

SHEET NO. 117 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Chestnut Ridge\Chestnut Ridge_E-02.dwg



LOAD CALCULATION			
ITEM	DESCRIPTION	HP	FLA
1	PUMP NO. 1	10HP	14A
2	PUMP NO. 2 (STANDBY)	10HP	-- A
3	10 KVA TRANSFORMER		20.8A
SUBTOTAL			34.8A
25% OF LARGEST MOTOR LOAD			3.5A
MINIMUM AMPACITY @480V,3ϕ			38.3A

* BASED ON SELECTED PUMP MFG DATA

ELECTRICAL WARNING NAMEPLATE N-EW ENGRAVING

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
ONE-LINE DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

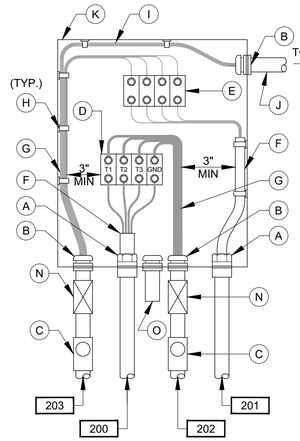
DRAWING NO. E-103

HORIZ: NONE
VERT: NONE

SHEET NO. 118 OF 225

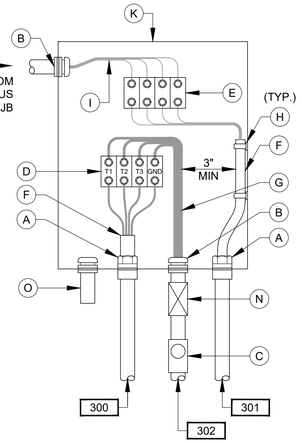
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

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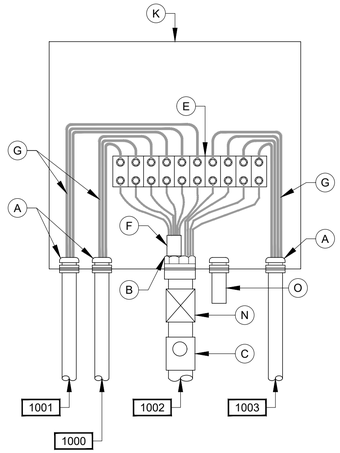
PUMP NO.1
JUNCTION BOX

DETAIL 3
NTS
(SEE NOTE 7)



PUMP NO.2
JUNCTION BOX

DETAIL 4
NTS
(SEE NOTE 7)

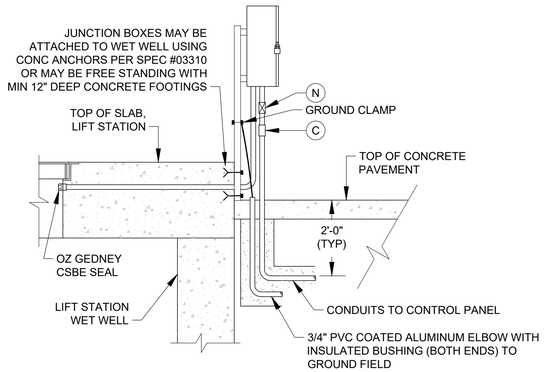


LEVEL TRANSMITTER
JUNCTION BOX

DETAIL 5
NTS
(SEE NOTE 7)

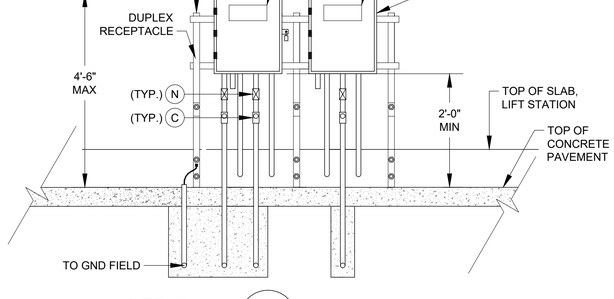
NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO JUNCTION BOXES USING 316 STAINLESS STEEL HARDWARE.
2. MAINTAIN MINIMUM SEPARATION REQUIRED UNDER NEC ARTICLE 504, BETWEEN INTRINSICALLY SAFE CONTROL WIRING AND NON INTRINSICALLY SAFE MOTOR FEEDER WIRING.
3. UNLESS OTHERWISE NOTED, ALL EXTERIOR EXPOSED CONDUITS SHALL BE PVC COATED ALUMINUM.
4. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS WASHERS, ETC SHALL BE TYPE 316 STAINLESS STEEL.
5. ALL UNDERGROUND CONDUITS TO BE ENCASED IN REINFORCED CONCRETE DUCTBANK.
6. PROVIDE ANTI-CORROSIVE SPRAY ON ANY BARE METAL PARTS OR EXPOSED WIRE.
7. SEE WIRING SCHEMATICS FOR TERMINALS AND WIRE NUMBERS.
8. ANY CONDUIT REQUIRING A CSBE SEAL, SHALL BE A MINIMUM SIZE OF 2 1/2" PER CABLE.
9. DETAIL SHOWN MAY BE MODIFIED PER SITE SITUATION.
10. COORDINATE WITH WASTE WATER OPERATIONS ELECTRICAL ORGANIZATION FOR THE OPENING OF JUNCTION BOXES TO THE SIDE OF WET WELL IF REQUIRED DURING CONSTRUCTION.
11. THE ENCLOSURES WITH ELECTRICAL CIRCUITS SHALL BE A MINIMUM OF 5 FEET FROM ANY CLASSIFIED AREA, OTHERWISE EXPLOSION PROOF TYPE ENCLOSURES SHALL BE USED.

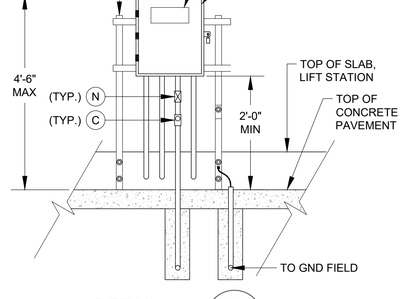


TYP SIDE VIEW FOR DETAIL 1, & 2

(SEE NOTE 10)



DETAIL 1
NTS
(SEE NOTE 9)



DETAIL 2
NTS
(SEE NOTE 9)

JUNCTION BOX EQUIPMENT SCHEDULE

- A - OZ GEDNEY CSBE SEAL
- B - WATERTIGHT CONDUIT HUB WITH INSULATED BUSHING
- C - CLASS I, DIV 1, EXPLOSION PROOF SEAL INSTALLED PER NEC DIV 501
- D - POWER TERMINAL BLOCK W/SCREW DOWN BOX LUGS
- E - CONTROL TERM BLOCK W/SCREW DOWN BOX LUGS
- F - MULTI-CONDUCTOR CABLE, REMOVE OUTER JACKET AS SHOWN
- G - WIRING AS SCHEDULED
- H - WIRING HARNESS PERMANENTLY AFFIXED
- I - PUMP CONTROL WIRING FROM PUMP NO.1 TO NO.2
- J - 1 1/2" PVC COATED CONDUIT NIPPLE
- K - NEMA 6P STAINLESS STEEL JUNCTION BOX WITH GASKETED FRONT COVER, SINGLE QUARTER TURN, OIL-TIGHT LATCH AND PADLOCKING PROVISIONS, MINIMUM SIZE: 12"W X 16"H X 6"D
- L - NAMEPLATE, SEE SPECIFICATIONES (SEE NAMEPLATE SCHEDULE)
- M - NOT USED.
- N - EXPANSION FITTING
- O - DRAIN VENT

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
JUNCTION BOX DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-104

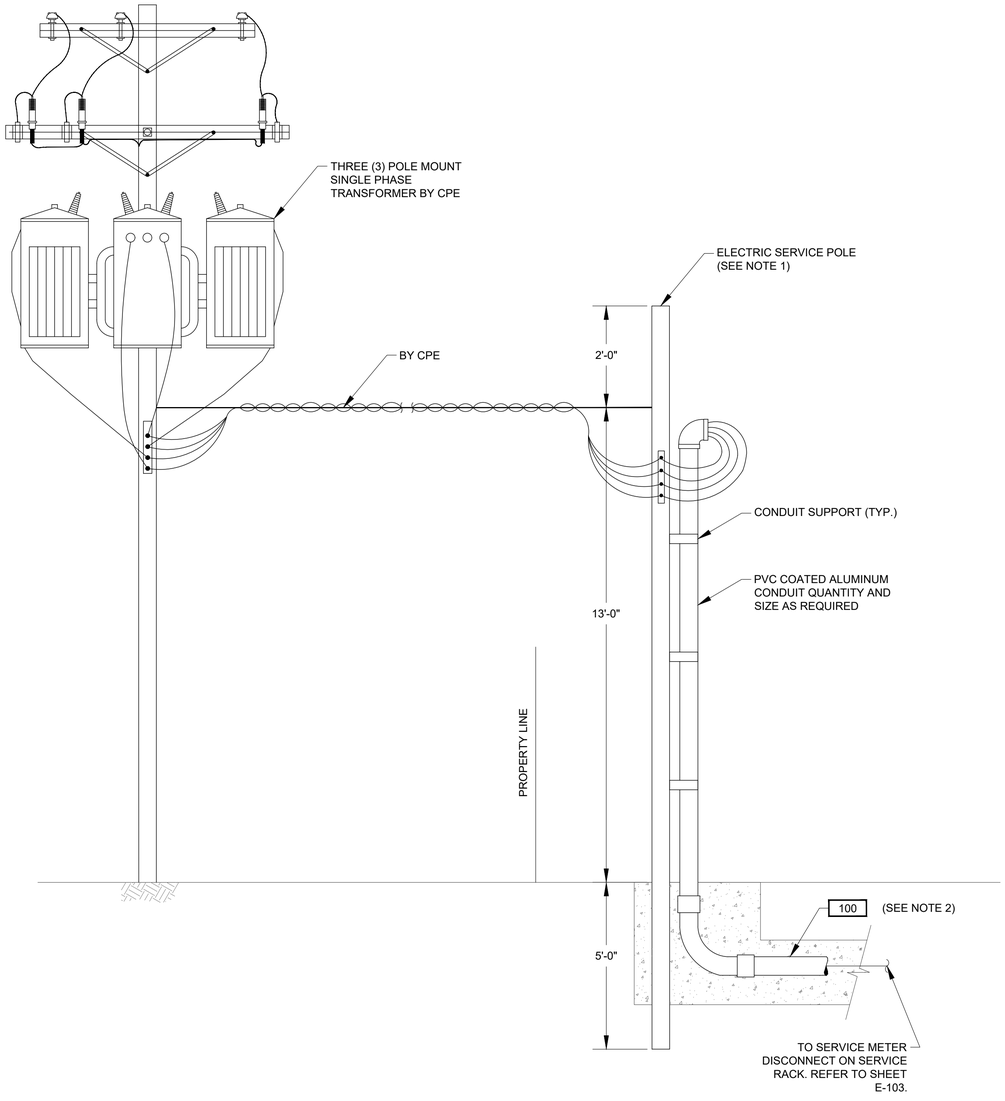
HORIZ: NONE
VERT: NONE

SHEET NO. 119 OF 225

DRAWING SCALE

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ELECTRICAL SERVICE ENTRANCE

DETAIL 1
NTS. -

NOTES:

1. WOODEN POLE 20' LONG. TOP DIAMETER 6", BOTTOM DIAMETER 8" PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
2. ELECTRICAL SERVICE FEEDER PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. COORDINATE WITH CPE FOR THE REQUIREMENTS OF THE INSTALLATION.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
SERVICE POLE DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

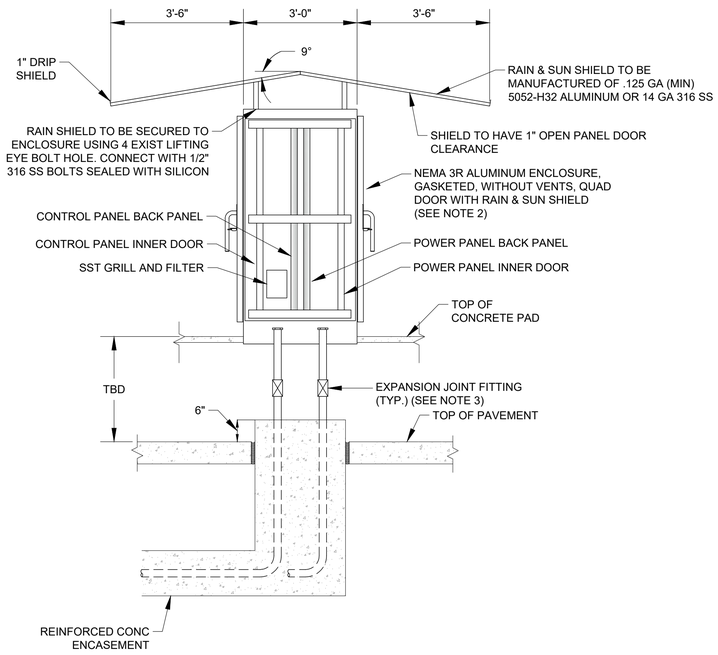
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

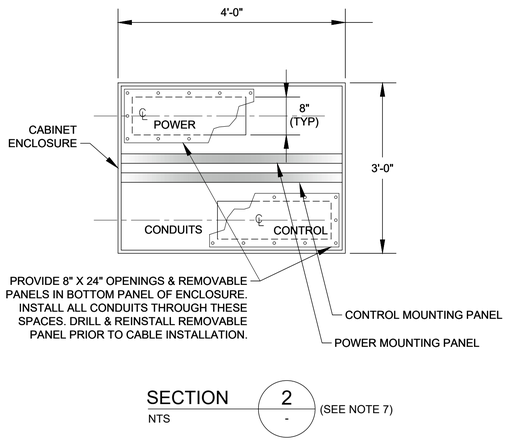
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HORIZ: NONE
VERT: NONE
SHEET NO. 120 OF 225
DRAWING SCALE
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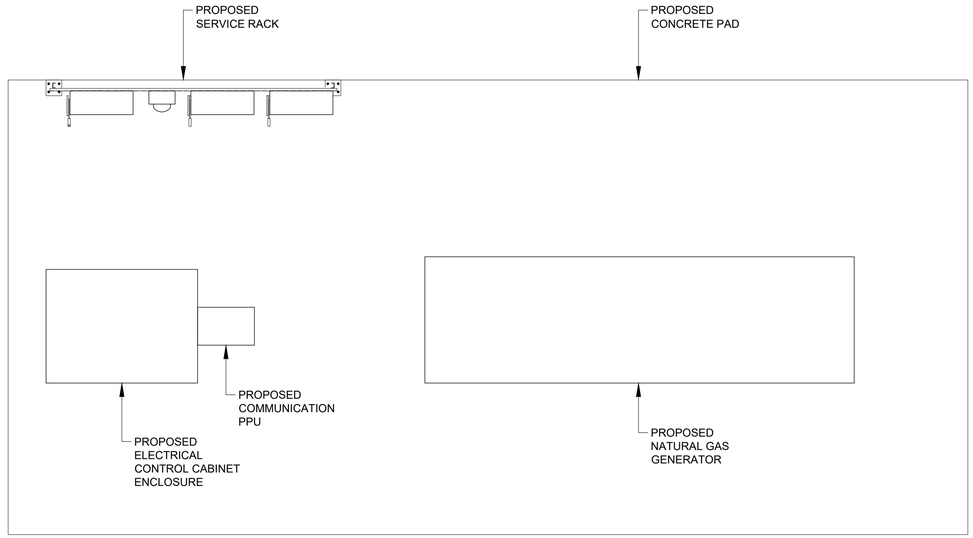
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CONTROL CABINET ENCLOSURE ON CONCRETE PAD



SECTION 2 (SEE NOTE 7)
NTS -



CONTROL CABINET ENCLOSURE ON ELEVATED PAD DETAIL

DETAIL 1
1/2" = 1'-0" -

NOTES:

1. SEE SHEET I-095-603 FOR EQUIPMENT SCHEDULE.
2. REFER TO SPEC 13325-8 FOR PANEL DIMENSIONS.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. REFER TO STRUCTURAL DRAWINGS .
6. CONDUIT TO BE MOUNTED BELOW PLATFORM GRATING.
7. ALL CONDUIT ENTERING THE CABINET SHALL BE BOTTOM ENTRY.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
CONTROL PANEL DETAIL

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-106
HORIZ: NONE
VERT: NONE
SHEET NO. 121 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Chestnut Ridge\Chestnut Ridge_E-06.dwg

	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
A	MAIN BONDING JUMPER	--	--	MAIN FUSED DISCONNECT NEUTRAL	MAIN FUSED DISCONNECT GROUND	--	#4 CU GND.
B	EQUIPMENT BONDING JUMPER	--	--	MCC/POWER PANEL ENCLOSURE	POWER/CONTROL PANEL & EQUIPMENT	--	#4 CU GND.
C	GROUNDED ELECTRODE CONDUCTOR	--	--	GROUNDING ELECTRODE	MAIN SERVICE FUSED DISCONNECT GROUNDING	--	#4 CU GND.
100	SERVICE ENTRANCE	480V	200A	UTILITY POWER SERVICE	METER DISCONNECT		3 #3/0 AWG., #4 NEUT. #3 GND., 2-1/2" C.
100A	SERVICE POWER	480V	200A	SERVICE DISCONNECT	MANUAL TRANSFER SWTICH	--	3 #3/0 AWG., #4 NEUT. #3 GND., 2-1/2" C.
100B	MCC SERVICE POWER	480V	200A	MANUAL TRANSFER SWITCH	MAIN BREAKER IN MCC	--	3 #3/0 AWG., #4 NEUT. #3 GND., 2-1/2" C.
100C	NORMAL/EMERGENCY POWER STATUS	24VDC	--	MANUAL TRANSFER SWITCH	CONTROL PANEL	CAPPED CONDUITS	4 #14 AWG., 1"C.
100D	EMERGENCY POWER	480V	200A	GENERATOR DISCONNECT	MANUAL TRANSFER SWITCH	--	3 #3/0 AWG., #4 NEUT. #3 GND., 2-1/2" C.
101	GROUND ELECTRODE CONDUCTOR	--	--	MCC ENCLOSURE	GROUND FIELD	--	#2/0 GND.
102	GROUND ELECTRODE CONDUCTOR	--	--	BUILDING STEEL	GROUND FIELD	--	#2/0 GND.
103	BUILDING GROUNDING	--	--	BUILDING REBAR	LIGHTNING GROUND ROD	--	#2/0 GND.
104	GROUND ELECTRODE CONDUCTOR	--	--	CONTROL PANEL	GROUND FIELD	--	#2/0 GND.
105	COMMUNICATION	--	--	COMMUNICATION POLE	CONTROL PANEL	--	1-1/2"C. CAT 5E
105A	COMMUNICATION POLE LIGHT	120V	--	COMMUNICATION POLE	LIGHTING PANEL	--	2#12, #12G, 1"C.
200	PUMP NO. 1 POWER	480V	10 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
201	PUMP NO. 1 CONTROLS	120V	--	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
202	PUMP NO. 1 POWER	480V	10 HP	PUMP NO. 1 JUNCTION BOX	PUMP STARTER	--	3#10, #10 GND., 1"C.
203	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 1 JUNCTION BOX	PUMP STARTER	COMBINE PUMP 1 & 2 CONTROLS	COMBINE 200 & 300 TAG WIRING, 8#14, 1"C.
205	PUMP NO. 1 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	12#14, 3/4"C.
300	PUMP NO. 2 POWER	480V	10 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
301	PUMP NO. 2 CONTROLS	120V	--	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
302	PUMP NO. 2 POWER	480V	10 HP	PUMP NO. 2 JUNCTION BOX	PUMP STARTER	--	3#10, #10 GND., 1"C.
305	PUMP NO. 2 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	12#14, 3/4"C.
600	LIGHTING PANEL FEEDER	480V	40A	MOTOR CONTROL CENTER	LIGHTING TRANSFORMER	--	2#8, #8 GND., 1"C.
601	LIGHTING PANEL GROUND	--	--	LIGHTING PANEL	GROUND FIELD	--	#8 GND., 1"C.
602	LIGHTING PANEL FEEDER	120/240V	--	LIGHTING TRANSFORMER	LIGHTING PANEL	--	3#4, #6 GND., 1-1/4" C.
900	INTRUSION ALARM	24VDC	--	MOTION SWITCH	CONTROL PANEL	--	2#14, 3/4" C.
1000	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2"C
1001	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2"C
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2-TRI, 4#14, 2" C.
1003	WELL FLOAT SWITCHES	24VDC	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1 & NO.2	--	MANUFACTURER'S CABLE IN 2-1/2"C
1100	120VAC FOR RECEPTACLE	-	--	LIGHTING PANEL	RECEPTACLE NEXT TO TRANSMITTER J-BOX	--	2#12, #12G, 1" C.
1200	120VAC FOR RECEPTACLE	-	--	LIGHTING PANEL	RECEPTACLE NEXT TO PUMP NO.2 J-BOX	--	2#12, #12G, 1" C.
1300	SITE LIGHTING	120VAC	--	LIGHTING PANEL	SITE LIGHTS	--	2#12, #12G, 1" C.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
CONDUIT SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-107

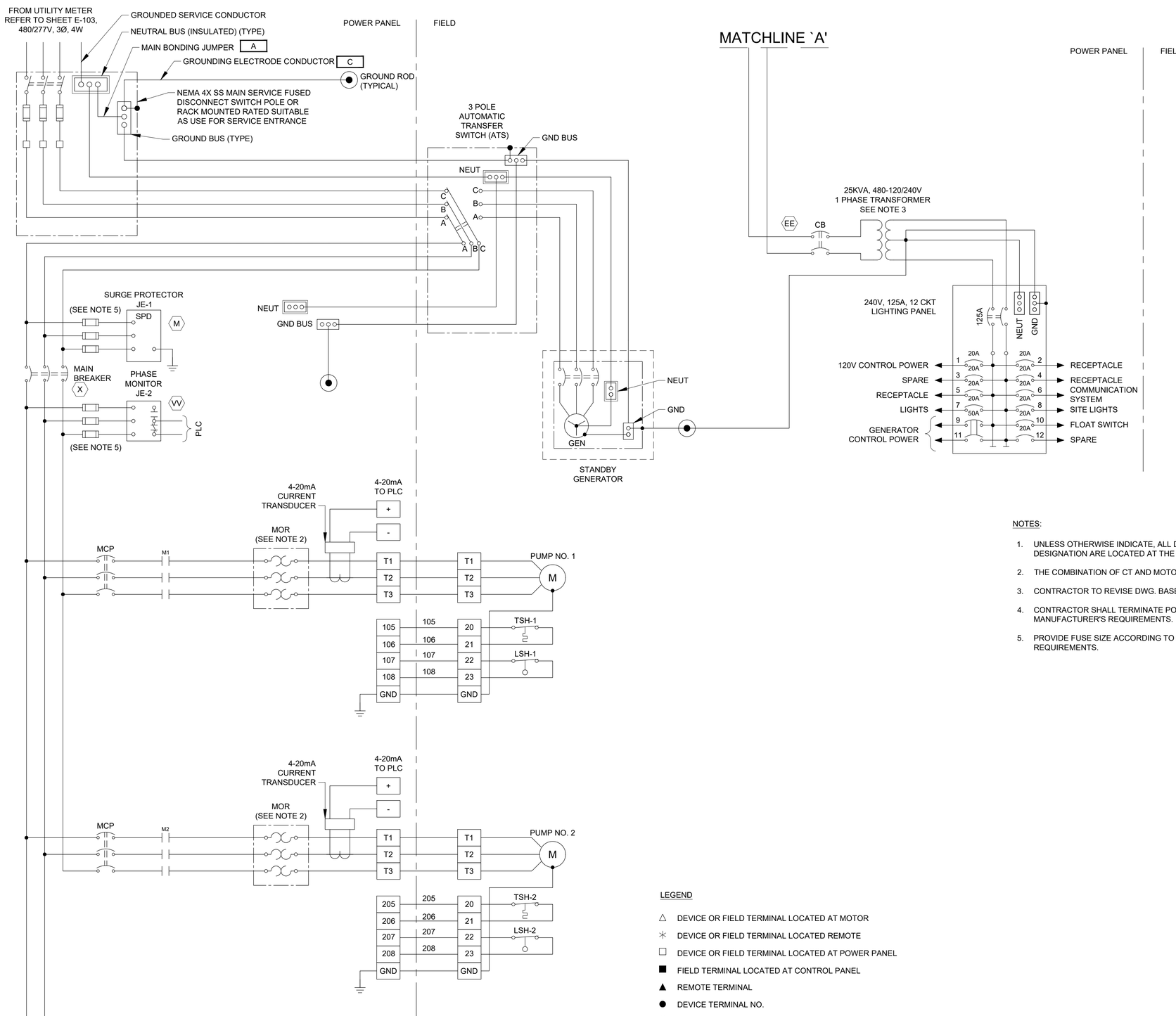
HORIZ: NONE
VERT: NONE

SHEET NO. 122 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

PLOTTED: 7/23/2025 1:34 PM PEN TABLE: Z_PUB_WKS_H.ctb
FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Chestnut Ridge\Chestnut Ridge_E-07.dwg



NOTES:

1. UNLESS OTHERWISE INDICATE, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
2. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.
3. CONTRACTOR TO REVISE DWG. BASED ON MANUFACTURE AND SIZE.
4. CONTRACTOR SHALL TERMINATE POWER & CONTROL WIRES PER MANUFACTURER'S REQUIREMENTS.
5. PROVIDE FUSE SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
THREE-WIRE DIAGRAM

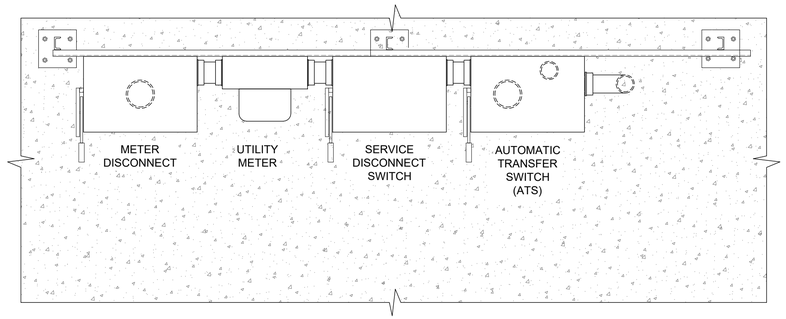
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

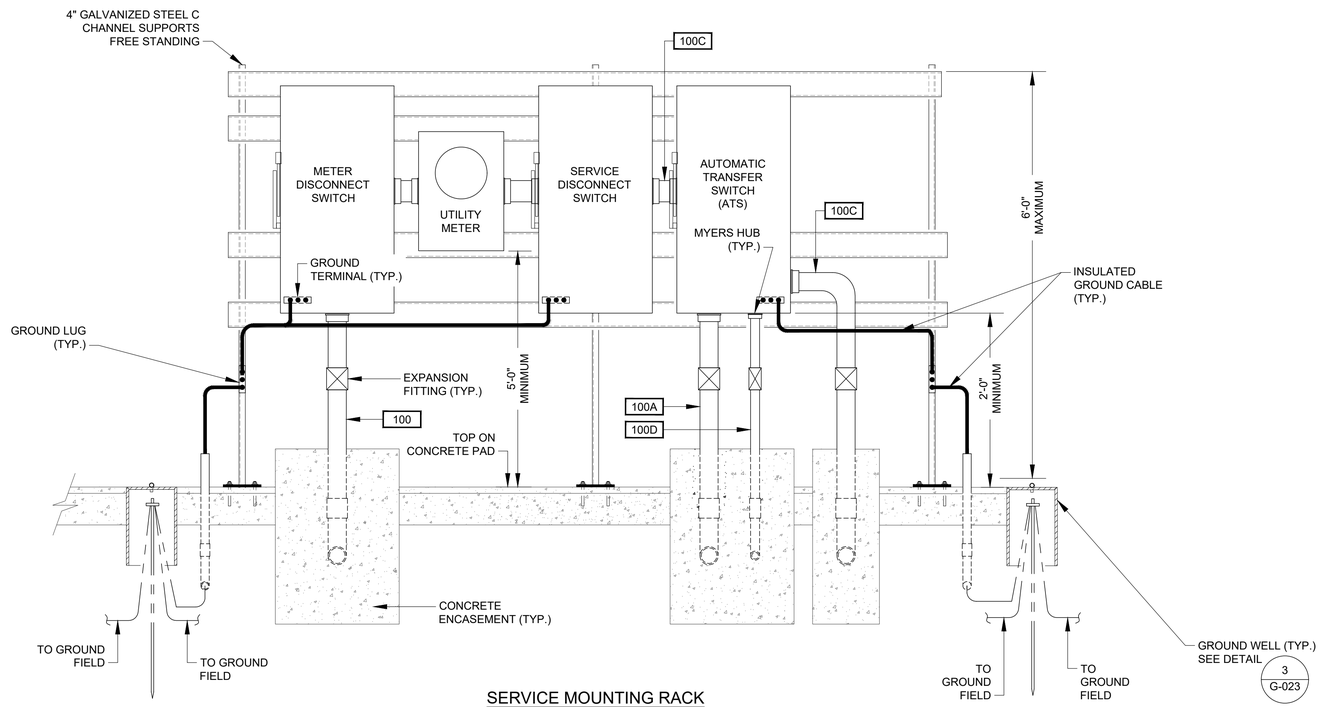
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-108
HORIZ: NONE
VERT: NONE
SHEET NO. 123 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Chestnut Ridge\Chestnut Ridge_E-08.dwg



PLAN



SERVICE MOUNTING RACK

DETAIL 1
NTS. -

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
SERVICE RACK DETAILS

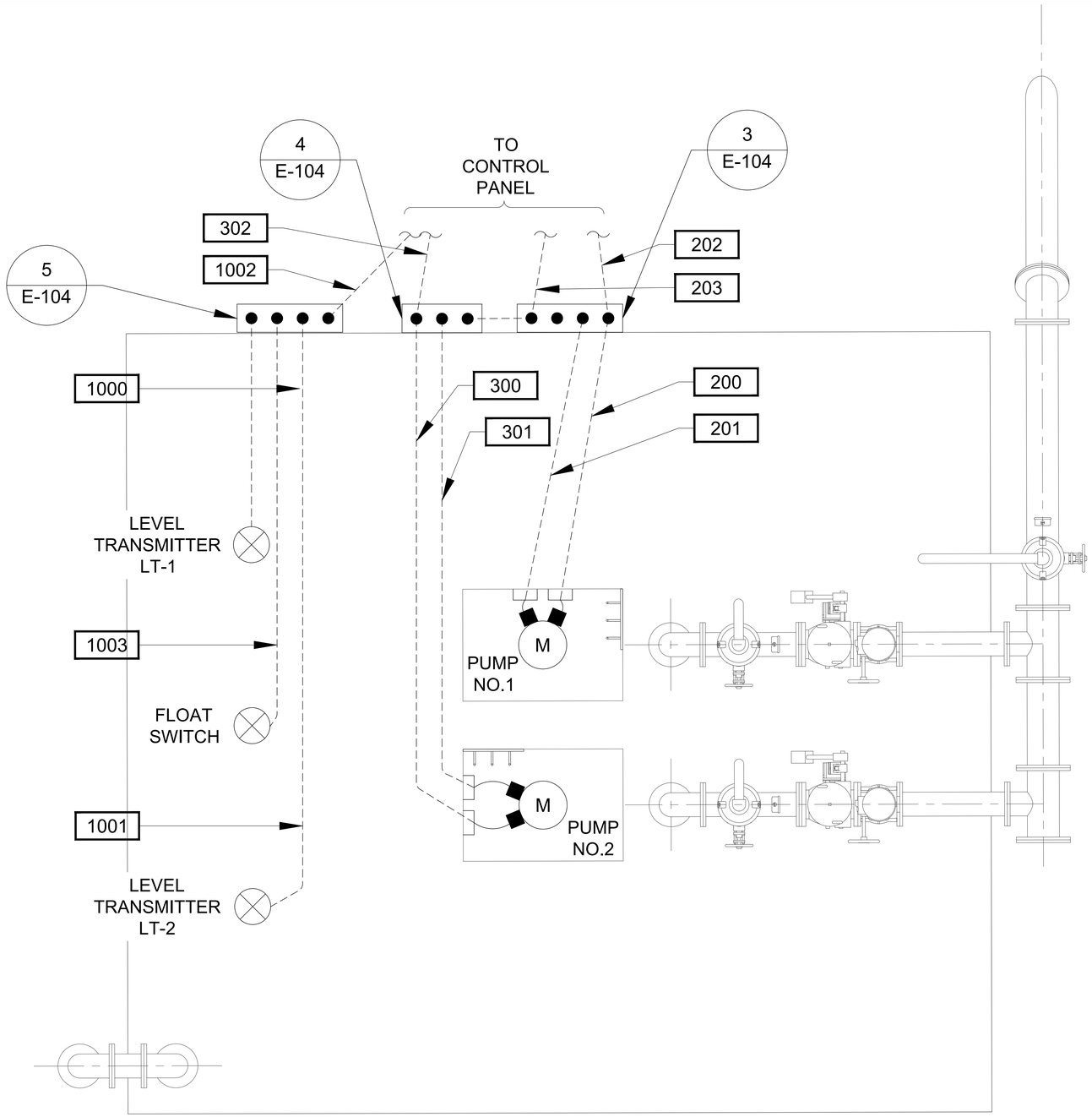
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-109
HORIZ: NONE
VERT: NONE
SHEET NO. 124 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Chestnut Ridge\Chestnut Ridge_E-09.dwg



CHESTNUT RIDGE LIFT STATION
ENLARGED PLAN

PLAN

3/4"=1'-0"

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

CHESTNUT RIDGE
LIFT STATION
ENLARGED SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-110	HORIZ: 3/4"=1'-0" VERT: 3/4"=1'-0"
SHEET NO. 125 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Chestnut Ridge\Chestnut Ridge_E-10.dwg



LADBROOK ELECTRICAL
EXISTING SITE

PLAN

1"= 5'-0"



EXISTING SERVICE DISCONNECT

PHOTOGRAPH A
NTS -



EXISTING CPE METER

PHOTOGRAPH B
NTS -



EXISTING WIMAX POLE

PHOTOGRAPH C
NTS -

NOTES BY SYMBOL "#":

1. EXISTING CPE METER SHALL BE DEMOLISHED AND REMOVED BY CENTERPOINT.
2. EXISTING SERVICE DISCONNECT TO BE DEMOLISHED AND REMOVED.
3. EXISTING WIMAX BOX TO BE DEMOLISHED AND REMOVED.
4. EXISTING WIMAX POLE FIXTURES, CONDUITS AND WIRES TO BE DEMOLISHED AND REMOVED.



EXISTING WIMAX BOX

PHOTOGRAPH D
NTS -

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

PLOTTED: 8/5/2025 10:44 AM

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

LADBROOK
LIFT STATION
DEMOLITION SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-201

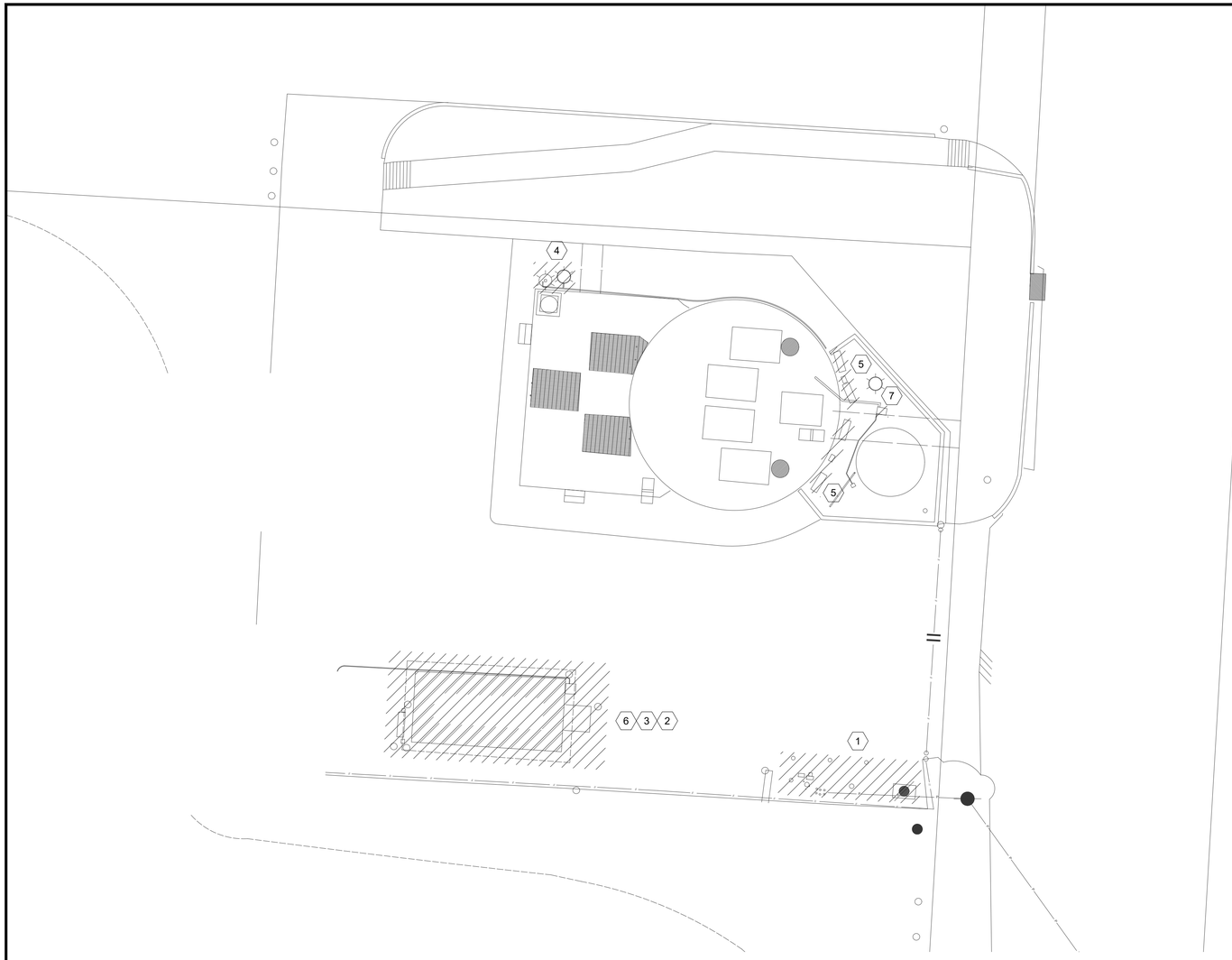
HORIZ: 1"=5'-0"
VERT: 1"=5'-0"

SHEET NO. 126 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Ladbrook\Ladbrook_E-01.dwg



MAGNOLIA PARK ELECTRICAL
EXISTING SITE

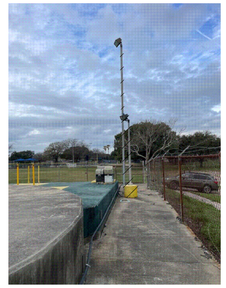
PLAN

1"= 10'-0"



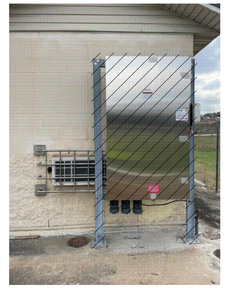
EXISTING WEATHERHEAD
& UTILITY METER

PHOTOGRAPH A
NTS -



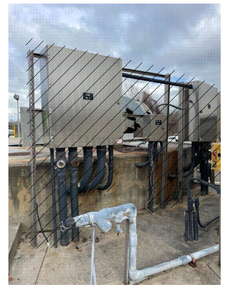
EXISTING LIGHT
POLE

PHOTOGRAPH D
NTS -



EXISTING EMERGENCY
DISCONNECT

PHOTOGRAPH B
NTS -



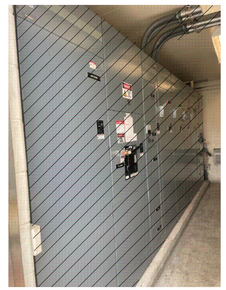
EXISTING PUMP
JUNCTION BOXES & AIR CELL

PHOTOGRAPH E
NTS -



EXISTING WIMAX
BOX

PHOTOGRAPH C
NTS -



EXISTING MCC
(INSIDE ELECTRICAL BUILDING)

PHOTOGRAPH F
NTS -



EXISTING CONTROL PANEL
(INSIDE ELECTRICAL BUILDING)

PHOTOGRAPH G
NTS -



EXISTING ODOR CONTROL PANEL
(OUTSIDE ELECTRICAL BUILDING)

PHOTOGRAPH G
NTS -

NOTES BY SYMBOL "(#)":

1. EXISTING WEATHERHEAD & UTILITY METER TO BE DEMOLISHED AND REMOVED.
2. EXISTING EMERGENCY DISCONNECT TO BE DEMOLISHED AND REMOVED.
3. EXISTING WIMAX BOX TO BE DEMOLISHED AND REMOVED.
4. EXISTING POLE LIGHT TO BE DEMOLISHED AND REMOVED.
5. EXISTING PUMP JUNCTION BOXES & AIR CELL TO BE DMEOLISHED AN REMOVED.
6. EXISTING ELECTRICAL BUILDING, MCC, AND OTHER ASSOCIATED EQUIPMENT TO BE DEMOLISHED AND REMOVED.
7. EXISTING ODOR CONTROL TO BE DEMOLISHED AND REMOVED.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
DEMOLITION SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-301

HORIZ: 1"=10'-0"
VERT: 1"=10'-0"

SHEET NO. 127 OF 225

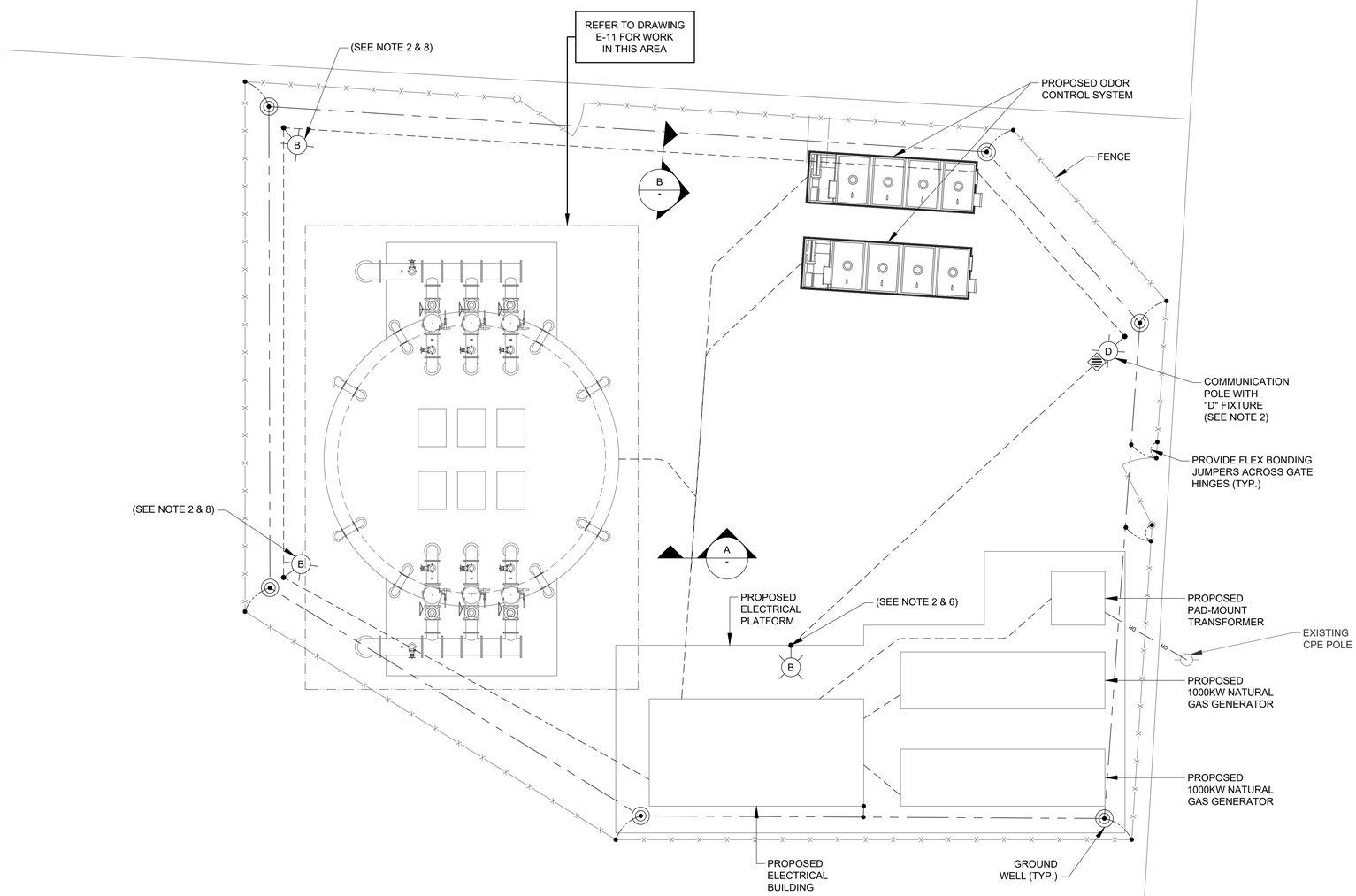
DRAWING SCALE

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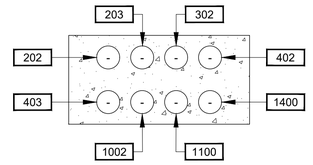
PLOTTED: 8/5/2025 10:44 AM PEN TABLE: Z_PUB_WKS_H.ctb
FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-01.dwg

NOTES:

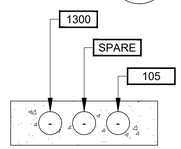
1. THE ELECTRICAL INSTALLATION IN THE WET WELL SHALL BE EXPLOSION PROOF, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE FOR CLASS I, DIVISION 1 LOCATIONS.
2. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. DUSK TO DAWN PHOTOCELL CONTROL.
4. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1. OUTSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.
5. GROUNDING LOOP SHALL BE BURIED 30" BELOW FINISHED GRADE.
6. AREA LIGHTING MOUNTED ON PLATFORM.
7. CONDUIT TO BE INSTALLED BELOW PLATFORM.
8. TYPE "B" FIXTURE TO BE INSTALLED ON THE POLE PROVIDING WIRES FOR THE "B" LIGHT.



MAGNOLIA PARK ELECTRICAL
PROPOSED SITE
PLAN
1"= 10'-0"



DUCTBANK
SECTION A
NTS



DUCTBANK
SECTION B
NTS

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
PROPOSED SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-302

HORIZ: 1"=10'-0"
VERT: 1"=10'-0"

SHEET NO. 128 OF 225

DRAWING SCALE

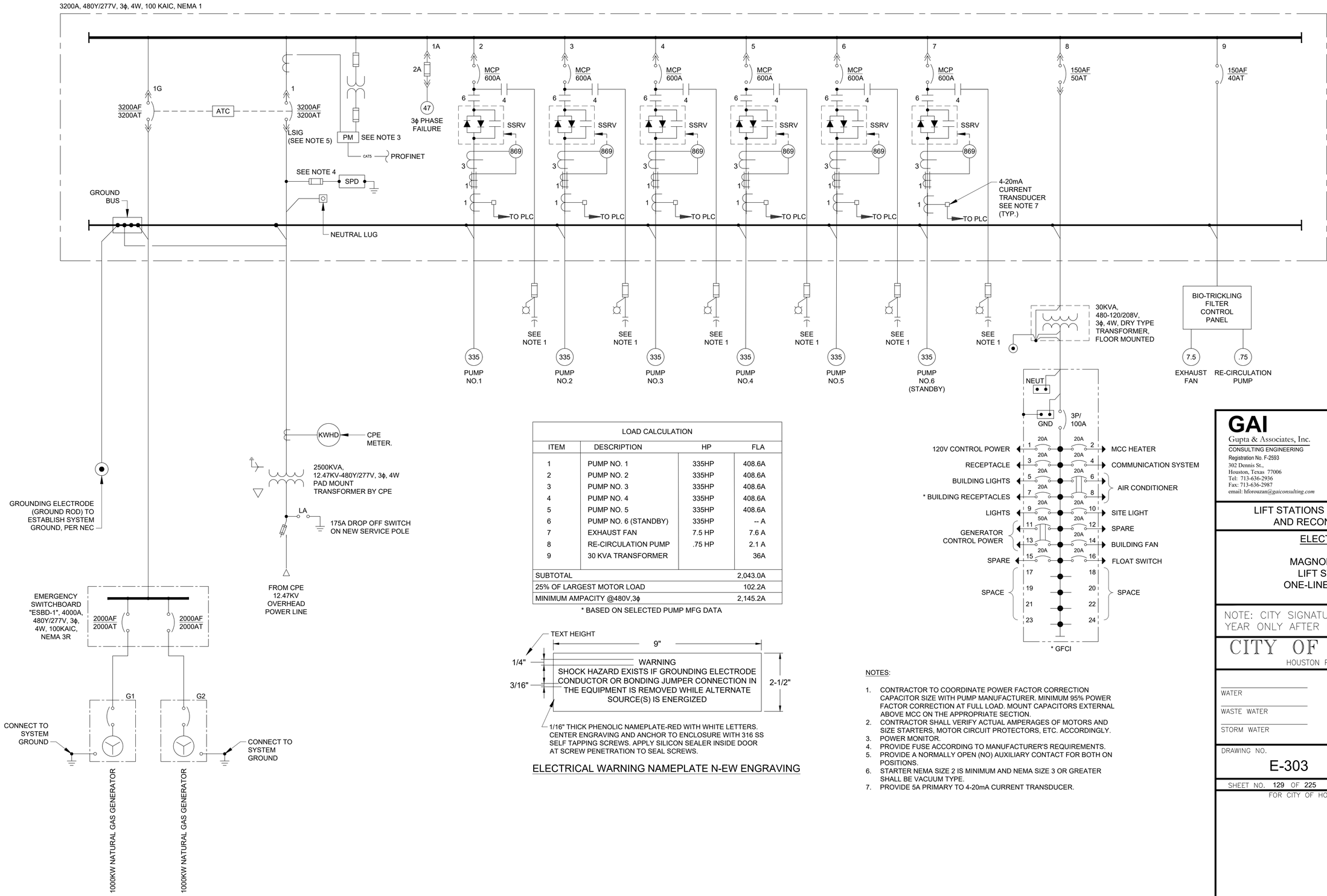
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PEN TABLE: Z_PUB_WKS_H.ctb

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LOAD CALCULATION			
ITEM	DESCRIPTION	HP	FLA
1	PUMP NO. 1	335HP	408.6A
2	PUMP NO. 2	335HP	408.6A
3	PUMP NO. 3	335HP	408.6A
4	PUMP NO. 4	335HP	408.6A
5	PUMP NO. 5	335HP	408.6A
6	PUMP NO. 6 (STANDBY)	335HP	-- A
7	EXHAUST FAN	7.5 HP	7.6 A
8	RE-CIRCULATION PUMP	.75 HP	2.1 A
9	30 KVA TRANSFORMER		36A
SUBTOTAL			2,043.0A
25% OF LARGEST MOTOR LOAD			102.2A
MINIMUM AMPACITY @480V,3ϕ			2,145.2A

* BASED ON SELECTED PUMP MFG DATA

1/16" THICK PHENOLIC NAMEPLATE-RED WITH WHITE LETTERS. CENTER ENGRAVING AND ANCHOR TO ENCLOSURE WITH 316 SS SELF TAPPING SCREWS. APPLY SILICON SEALER INSIDE DOOR AT SCREW PENETRATION TO SEAL SCREWS.

ELECTRICAL WARNING NAMEPLATE N-EW ENGRAVING

NOTES:

1. CONTRACTOR TO COORDINATE POWER FACTOR CORRECTION CAPACITOR SIZE WITH PUMP MANUFACTURER. MINIMUM 95% POWER FACTOR CORRECTION AT FULL LOAD. MOUNT CAPACITORS EXTERNAL ABOVE MCC ON THE APPROPRIATE SECTION.
2. CONTRACTOR SHALL VERIFY ACTUAL AMPERAGES OF MOTORS AND SIZE STARTERS, MOTOR CIRCUIT PROTECTORS, ETC. ACCORDINGLY.
3. POWER MONITOR.
4. PROVIDE FUSE ACCORDING TO MANUFACTURER'S REQUIREMENTS.
5. PROVIDE A NORMALLY OPEN (NO) AUXILIARY CONTACT FOR BOTH ON POSITIONS.
6. STARTER NEMA SIZE 2 IS MINIMUM AND NEMA SIZE 3 OR GREATER SHALL BE VACUUM TYPE.
7. PROVIDE 5A PRIMARY TO 4-20mA CURRENT TRANSDUCER.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
ONE-LINE DIAGRAM

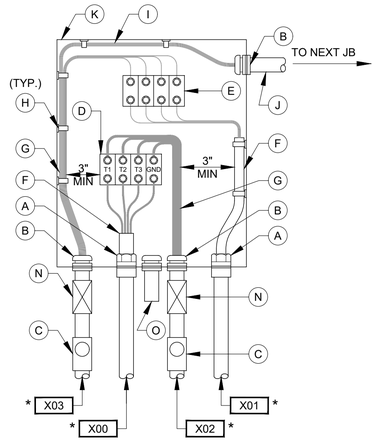
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

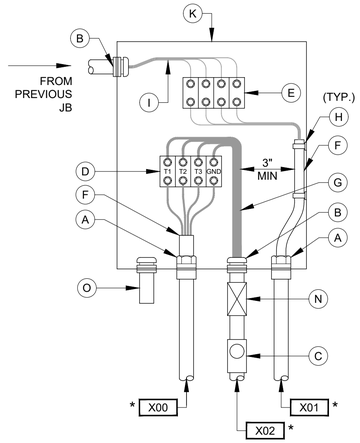
DRAWING NO. E-303
HORIZ: NONE
VERT: NONE
SHEET NO. 129 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-03.dwg



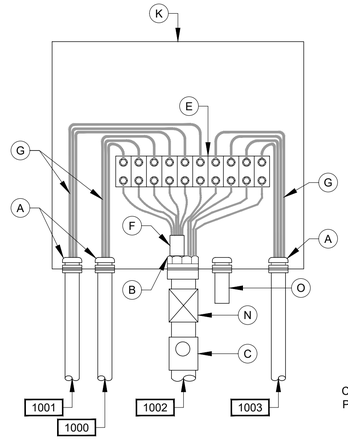
PUMP NO.1 & NO.3 & NO.5
JUNCTION BOX

DETAIL 3
NTS
(SEE NOTE 7)



PUMP NO.2 & NO.4 & NO.6
JUNCTION BOX

DETAIL 4
NTS
(SEE NOTE 7)



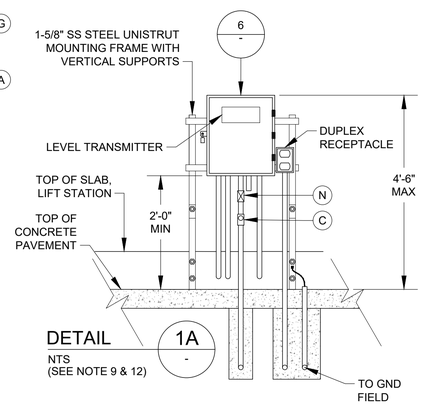
LEVEL TRANSMITTER
JUNCTION BOX

DETAIL 6
NTS
(SEE NOTE 7)

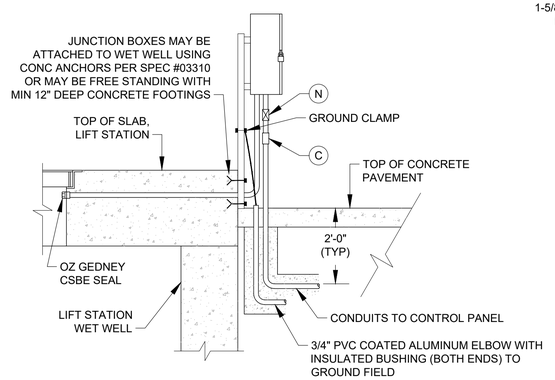
✱ REPLACE `X' PER NOTATION SCHEDULE

NOTATION SCHEDULE

`X'	PUMP NO.
2	1
3	2
4	3
5	4
6	5
7	6

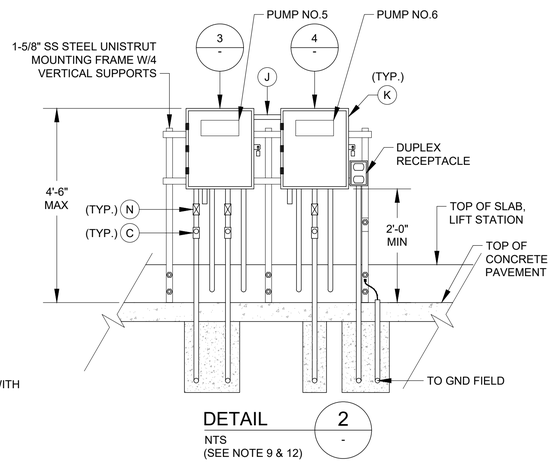


DETAIL 1A
NTS
(SEE NOTE 9 & 12)

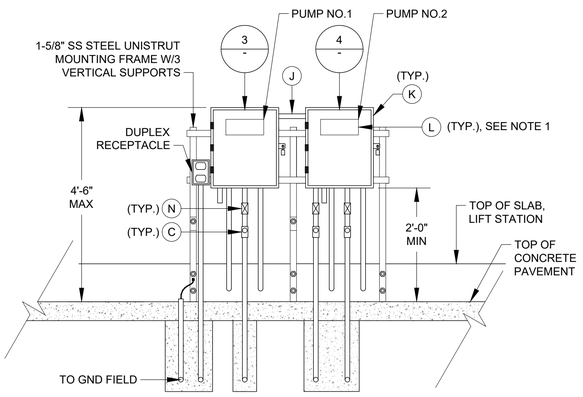


TYP SIDE VIEW FOR DETAIL 1, 1A, 2, & 7

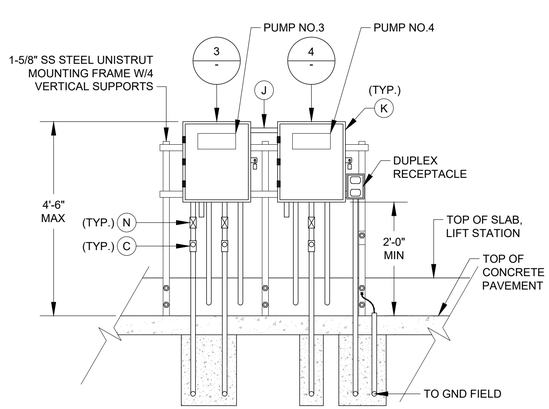
(SEE NOTE 10)



DETAIL 2
NTS
(SEE NOTE 9 & 12)



DETAIL 1
NTS
(SEE NOTE 9 & 12)



DETAIL 7
NTS
(SEE NOTE 11)

JUNCTION BOX EQUIPMENT SCHEDULE

- A - OZ GEDNEY CSBE SEAL
- B - WATERTIGHT CONDUIT HUB WITH INSULATED BUSHING
- C - CLASS I, DIV 1, EXPLOSION PROOF SEAL INSTALLED PER NEC DIV 501
- D - POWER TERMINAL BLOCK W/SCREW DOWN BOX LUGS
- E - CONTROL TERM BLOCK W/SCREW DOWN BOX LUGS
- F - MULTI-CONDUCTOR CABLE, REMOVE OUTER JACKET AS SHOWN
- G - WIRING AS SCHEDULED
- H - WIRING HARNESS PERMANENTLY AFFIXED
- I - PUMP CONTROL WIRING FROM PUMPS 2; 2 & 3; 4; OR D2, AS APPLICABLE
- J - 1 1/2" PVC COATED CONDUIT NIPPLE
- K - NEMA 4X STAINLESS STEEL JUNCTION BOX WITH GASKETED FRONT COVER, SINGLE QUARTER TURN, OIL-TIGHT LATCH AND PADLOCKING PROVISIONS, HOFFMAN D-3L16H1206 SS LF OR EQUAL. MINIMUM SIZE: 12"W X 16"H X 6"D
- L - NAMEPLATE, SEE SPECIFICATIONES (SEE NAMEPLATE SCHEDULE)
- M - MOTOR RATED SWITCH
- N - EXPANSION FITTING
- O - DRAIN VENT

NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO JUNCTION BOXES USING 316 STAINLESS STEEL HARDWARE.
2. MAINTAIN MINIMUM SEPARATION REQUIRED UNDER NEC ARTICLE 504, BETWEEN INTRINSICALLY SAFE CONTROL WIRING AND NON INTRINSICALLY SAFE MOTOR FEEDER WIRING.
3. UNLESS OTHERWISE NOTED, ALL EXTERIOR EXPOSED CONDUITS SHALL BE PVC COATED ALUMINUM.
4. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS WASHERS, ETC SHALL BE TYPE 316 STAINLESS STEEL.
5. ALL UNDERGROUND CONDUITS TO BE ENCASED IN REINFORCED CONCRETE DUCTBANK.
6. PROVIDE ANTI-CORROSIVE SPRAY ON ANY BARE METAL PARTS OR EXPOSED WIRE.
7. SEE WIRING SCHEMATICS FOR TERMINALS AND WIRE NUMBERS.
8. ANY CONDUIT REQUIRING A CSBE SEAL, SHALL BE A MINIMUM SIZE OF 2 1/2" PER CABLE.
9. DETAIL SHOWN MAY BE MODIFIED PER SITE SITUATION.
10. COORDINATE WITH WASTE WATER OPERATIONS ELECTRICAL ORGANIZATION FOR THE OPENING OF JUNCTION BOXES TO THE SIDE OF WET WELL IF REQUIRED DURING CONSTRUCTION.
11. THE ENCLOSURES WITH ELECTRICAL CIRCUITS SHALL BE A MINIMUM OF 5 FEET FROM ANY CLASSIFIED AREA, OTHERWISE EXPLOSION PROOF TYPE ENCLOSURES SHALL BE USED.
12. THE RECEPTACLES SHALL BE EXPLOSION PROOF TYPE IF INSTALLED WITHIN 5 FEET OF CLASSIFIED AREA, SHALL BE FIELD VERIFIED.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
JUNCTION BOX DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

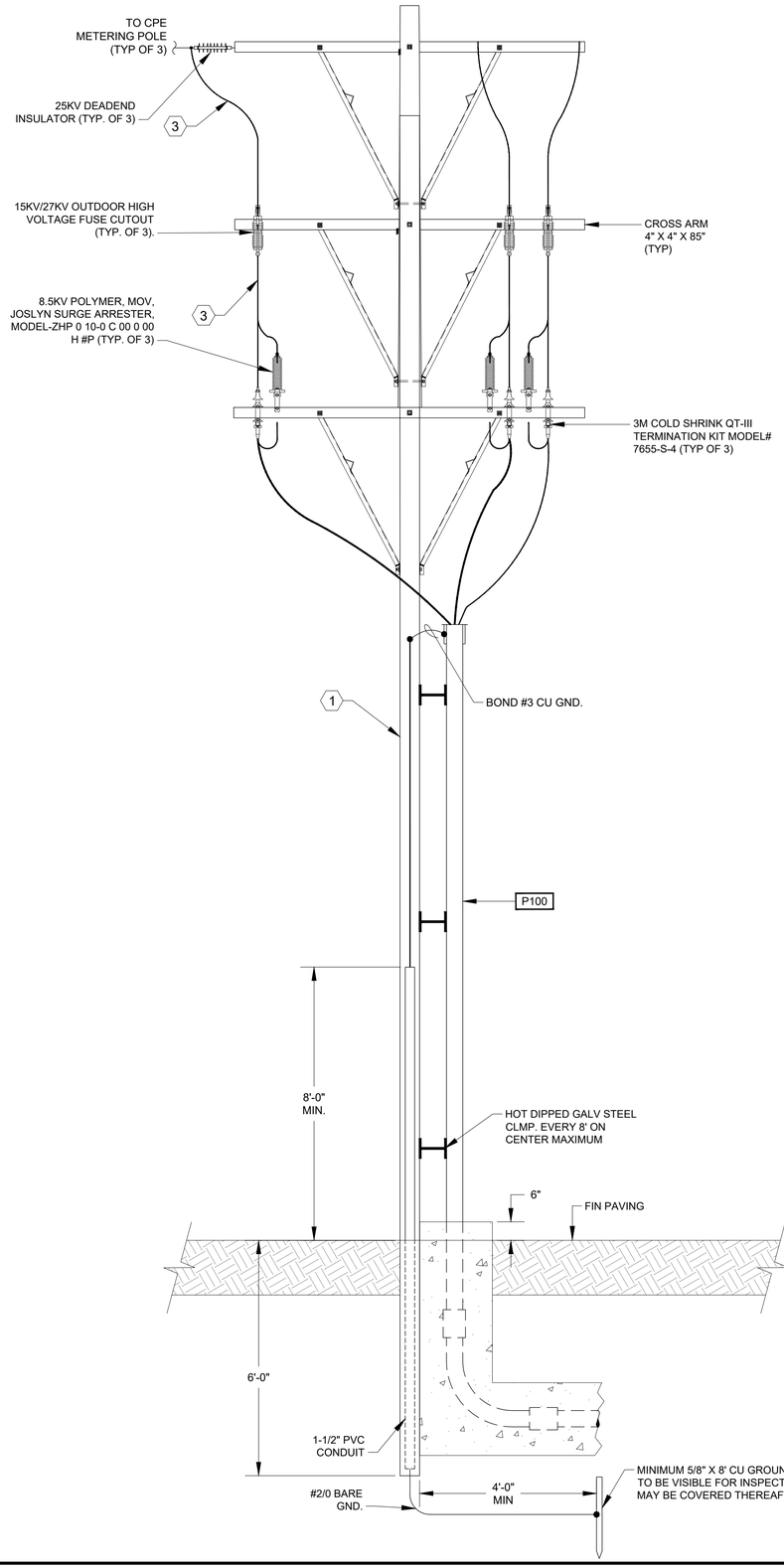
WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-304
HORIZ: NONE
VERT: NONE
SHEET NO. 130 OF 225
DRAWING SCALE
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ELECTRICAL SERVICE POLE

DETAIL 1
NTS. -

NOTES BY SYMBOL "⟨#⟩":

⟨1⟩ NEW CLASS 2 WOOD SERVICE POLE, 45'-0" LONG.

⟨2⟩ THE BURIAL DEPTH SHALL BE 6'-0" MINIMUM.

⟨3⟩ #2 AWG., CU., 15KV SHIELDED 133% INSULATION, WET LOCATION SUNLIGHT RESISTANT TYPE MV CABLE.

⟨4⟩ THE CONDUCTORS TO BE PROVIDED AND INSTALLED BY CPE.

GENERAL NOTES:

1. ALL CROSS ARMS WITH BRACINGS SHALL BE PROPERLY INSTALLED.
2. ALL AHRDWARE SHALL BE HOT DIPPED GALV. STEEL..
3. THE HOLE IN THE GROUND AROUND THE CONCRETE POLE SHALL BE BACKFILLED WITH CRUSHED LIME STONE AND SHALL BE PROPERLY STAMPED.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
SERVICE POLE DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

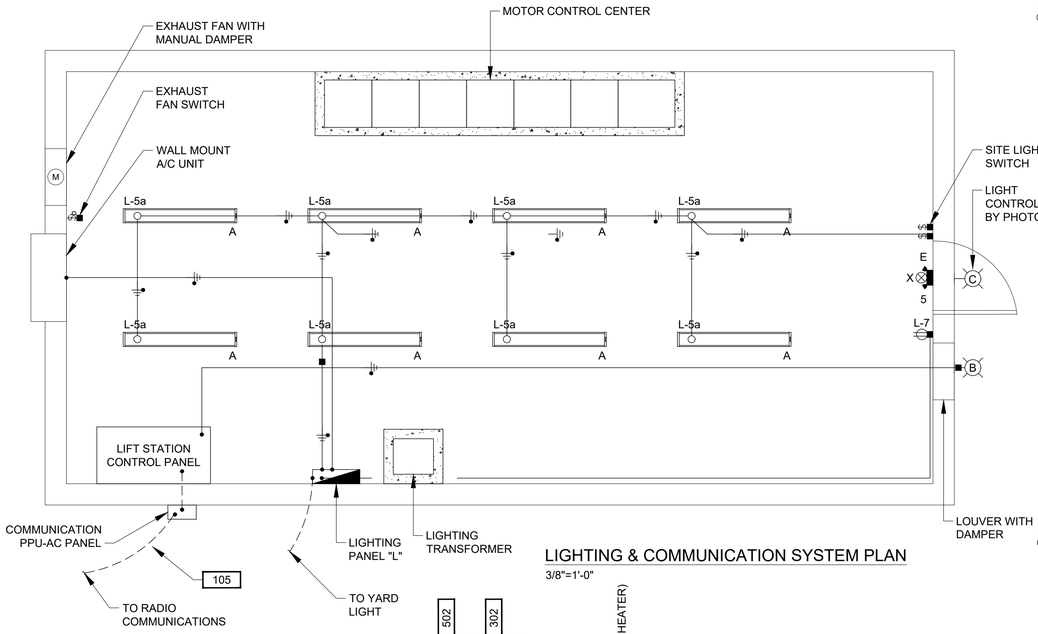
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-305
HORIZ: NONE
VERT: NONE
SHEET NO. 131 OF 225
DRAWING SCALE
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LIGHTING & COMMUNICATION SYSTEM PLAN

3/8"=1'-0"

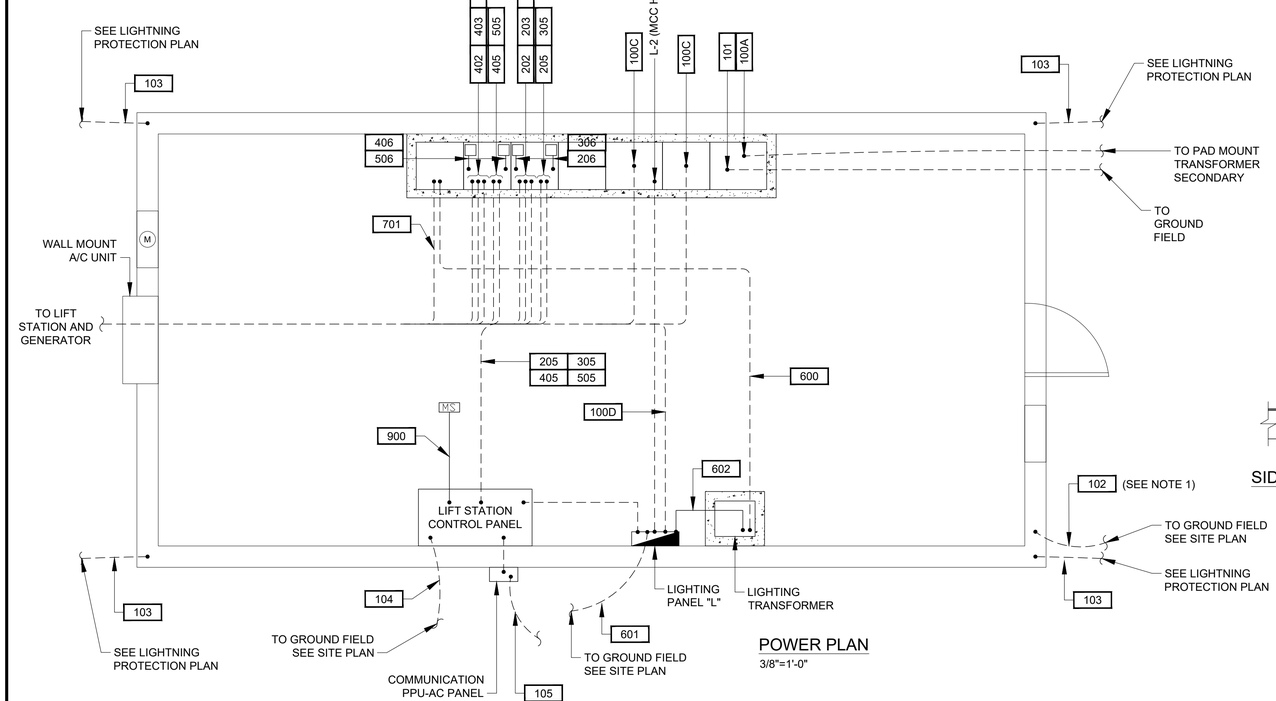


LIGHTNING PROTECTION PLAN

3/8"=1'-0"

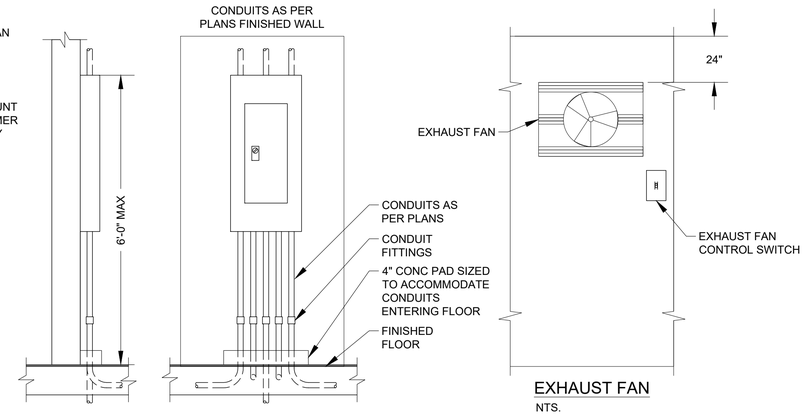
NOTES:

1. THERMO WELD BUILDING GROUND CONDUCTOR TO BUILDING REINFORCING STEEL.
2. BOND REBAR IN CONCRETE FOOTER TO GROUND ROD.



POWER PLAN

3/8"=1'-0"



SIDE ELEVATION

FRONT ELEVATION

TYPICAL PANEL INSTALLATION

DETAIL - NTS.

EXHAUST FAN

NTS.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
CONTROL BUILDING PLAN

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-306

HORIZ: AS SHOWN

VERT: AS SHOWN

SHEET NO. 132 OF 225

DRAWING SCALE

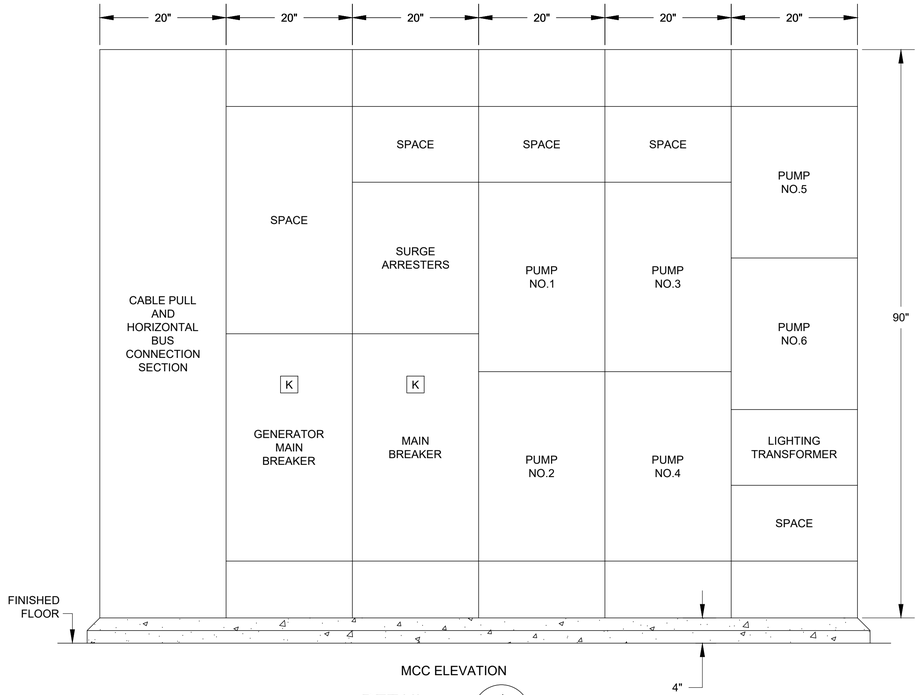
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MCC ELEVATION

DETAIL 1

NTS. -

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
MCC ELEVATION

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-307

HORIZ: NONE

VERT: NONE

SHEET NO. 133 OF 225

DRAWING SCALE

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	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
A	MAIN BONDING JUMPER	--	--	MAIN FUSED DISCONNECT NEUTRAL	MAIN FUSED DISCONNECT GROUND	--	2/0 GND.
B	EQUIPMENT BONDING JUMPER	--	--	MCC/POWER PANEL ENCLOSURE	POWER/CONTROL PANEL & EQUIPMENT GROUNDING	--	2/0 GND.
C	GROUNDED ELECTRODE CONDUCTOR	--	--	GROUNDING ELECTRODE	MAIN SERVICE FUSED DISCONNECT	--	2/0 GND.
100	SERVICE ENTRANCE	480V	VARIES	UTILITY POWER SERVICE	METER DISCONNECT		2 SETS OF 3 #350MCM, #2 NEUT., #2 GND., 3"C. EA.
100A	MCC SERVICE POWER	480V	VARIES	MANUAL TRANSFER SWITCH	MCC OR POWER PANEL	--	
100B	NORMAL/EMERRGENCY POWER STATUS	24VDC	--	MANUAL TRANSFER SWITCH	CONTROL PANEL	--	
100C	EMERGENCY POWER	480V	VARIES	GENERATOR DISCONNECT	PORTABLE GENERATOR	CAPPED CONDUITS	2, 3" C.
*100	SERVICE ENTRANCE	480V	VARIES	UTILITY POWER SERVICE	CT CAN	--	2 SETS OF 3 #350MCM, #2 NEUT., #2 GND., 3"C. EA.
*100A	SERVICE POWER	480V	VARIES	SERVICE DISCONNECT	MAIN BREAKER IN MCC	--	2 SETS OF 3 #350MCM, #2 NEUT., #2 GND., 3"C. EA.
*100B	EMERGENCY POWER	480V	VARIES	GENERATOR DISCONNECT	GENERATOR IN MCC BREAKER	--	2 SETS OF 3 #350MCM, #2 NEUT., #2 GND., 3"C. EA.
*100C	EMERGENCY POWER	480V	VARIES	GENERATOR DISCONNECT	PORTABLE GENERATOR	CAPPED CONDUITS	
101	GROUND ELECTRODE CONDUCTOR	--	--	POWER PANEL	GROUND FIELD	--	2/0 GND.
102	GROUND ELECTRODE CONDUCTOR	--	--	BUILDING STEEL	GROUND FIELD	--	2/0 GND.
103	BUILDING GROUNDING	--	--	BUILDING REBAR	LIGHTNING GROUND ROD	--	2/0 GND.
104	GROUND ELECTRODE CONDUCTOR	--	--	CONTROL PANEL OR MOTOR CONTROL CENTER	GROUND FIELD	--	2/0 GND.
105	COMMUNICATION	--	--	COMMUNICATION POLE	CONTROL PANEL	--	1-1/2"C. CAT-5E
105A	COMMUNICATION POLE LIGHT	120V	--	COMMUNICATION POLE	LIGHTING PANEL CKT #6 & CKT #4	--	L6 (IND.), 2#12 #12G, 1"C, L4 (OUTD.)
200	PUMP NO. 101 POWER	480V	280 HP	PUMP NO. 101	PUMP NO. 101 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
201	PUMP NO. 101 CONTROLS	120V	--	PUMP NO. 101	PUMP NO. 101 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
202	PUMP NO. 101 POWER	480V	280 HP	PUMP NO. 101 JUNCTION BOX	PUMP STARTER	--	3#1, #6 GND., 2" C.
203	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 101 JUNCTION BOX	PUMP STARTER	--	COMBINE 200 & 300 WIRING, 10#14 1"C.
205	PUMP NO. 101 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	12#14 1"C.
206	PUMP NO. 101 CAPACITOR	480V	TBD	PUMP NO. 101 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
300	PUMP NO. 102 POWER	480V	280 HP	PUMP NO. 102	PUMP NO. 102 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
301	PUMP NO. 102 CONTROLS	120V	--	PUMP NO. 102	PUMP NO. 102 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
302	PUMP NO. 102 POWER	480V	280 HP	PUMP NO. 102 JUNCTION BOX	PUMP STARTER	--	3#1, #6 GND., 2" C.
305	PUMP NO. 102 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	12#14 1"C.
306	PUMP NO. 102 CAPACITOR	480V	TBD	PUMP NO. 102 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
400	PUMP NO. 103 POWER	480V	280 HP	PUMP NO. 103	PUMP NO. 103 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
401	PUMP NO. 103 CONTROLS	120V	--	PUMP NO. 103	PUMP NO. 103 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
402	PUMP NO. 103 POWER	480V	280 HP	PUMP NO. 103 JUNCTION BOX	PUMP STARTER	--	3#1, #6 GND., 2" C.
403	COMBINED PUMP CONTROLS	120V	280 HP	PUMP NO. 103 JUNCTION BOX	CONTROL PANEL	--	COMBINE 400 & 500 WIRING, 10#14 1"C.
405	PUMP NO. 103 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	12#14 1"C.
406	PUMP NO. 103 CAPACITOR	480V	TBD	PUMP NO. 103 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
500	PUMP NO. 104 POWER	480V	280 HP	PUMP NO. 104	PUMP NO. 104 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
501	PUMP NO. 104 CONTROLS	120V	--	PUMP NO. 104	PUMP NO. 104 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
502	PUMP NO. 104 POWER	480V	--	PUMP NO. 104 JUNCTION BOX	PUMP STARTER	--	3#1, #6 GND., 2" C.
505	PUMP NO. 104 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	12#14 1"C.
506	PUMP NO. 104 CAPACITOR	480V	TBD	PUMP NO. 104 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
600	LIGHTING PANEL FEEDER	480V	--	MOTOR CONTROL CENTER	LIGHTING TRANSFORMER	--	2#8, #6 GND., 1"C.
601	LIGHTING PANEL GROUND	--	--	LIGHTING PANEL	GROUND FIELD	--	#8 GND., 1"C.
602	LIGHTING PANEL FEEDER	120/240V	--	LIGHTING TRANSFORMER	LIGHTING PANEL	--	3#4, #8 GND., 1-1/4"C.
700	PUMP NO. 105 POWER	480V	280 HP	PUMP NO. 105	PUMP NO. 5 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
701	PUMP NO. 105 CONTROLS	120V	--	PUMP NO. 105	PUMP NO. 5 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
702	PUMP NO. 105 POWER	480V	280 HP	PUMP NO. 105 JUNCTION BOX	PUMP STARTER	--	3#1, #6 GND., 2" C.
703	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 105 JUNCTION BOX	PUMP STARTER	--	COMBINE 500 & 700 WIRING, 5 #14 1"C.
705	PUMP NO. 105 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	12#14 1"C.
706	PUMP NO. 105 CAPACITOR	480V	280 HP	PUMP NO. 105 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	
1000	LEVEL TRANSMITTER LT-1	24VDC	--	TRANSMITTER	TRANSMITTER JUNCTION BOX	--	2-1/2"C.
1001	LEVEL TRANSMITTER LT-2	24VDC	--	TRANSMITTER	TRANSMITTER JUNCTION BOX	--	2-1/2"C.
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2 TRI, 4 #14, 2"C.
1003	WELL FLOAT SWITCHES	24VDC	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1	--	MANUFACTURER CABLE IN 2-1/2"C.
1004	FLOAT SWITCH	120V	--	SUMP PUMP MOTOR STARTER	FLOAT SWITCH	--	2 #12, #12 G, 1"C.
1100	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE NEXT TO TRANSMITTER J-BOX	--	L11 (IND.), 2#12 #12G, 1"C, L2 (OUTD.)
1200	120VAC FOR RECEPTACLE	--	--	LIGHTING PANEL	RECEPTACLE NEXT TO PUMP NO. 103 J-BOX	--	L13 (IND.), 2#12 #12G, 1"C, L4 (OUTD.)

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
CONDUIT SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-308

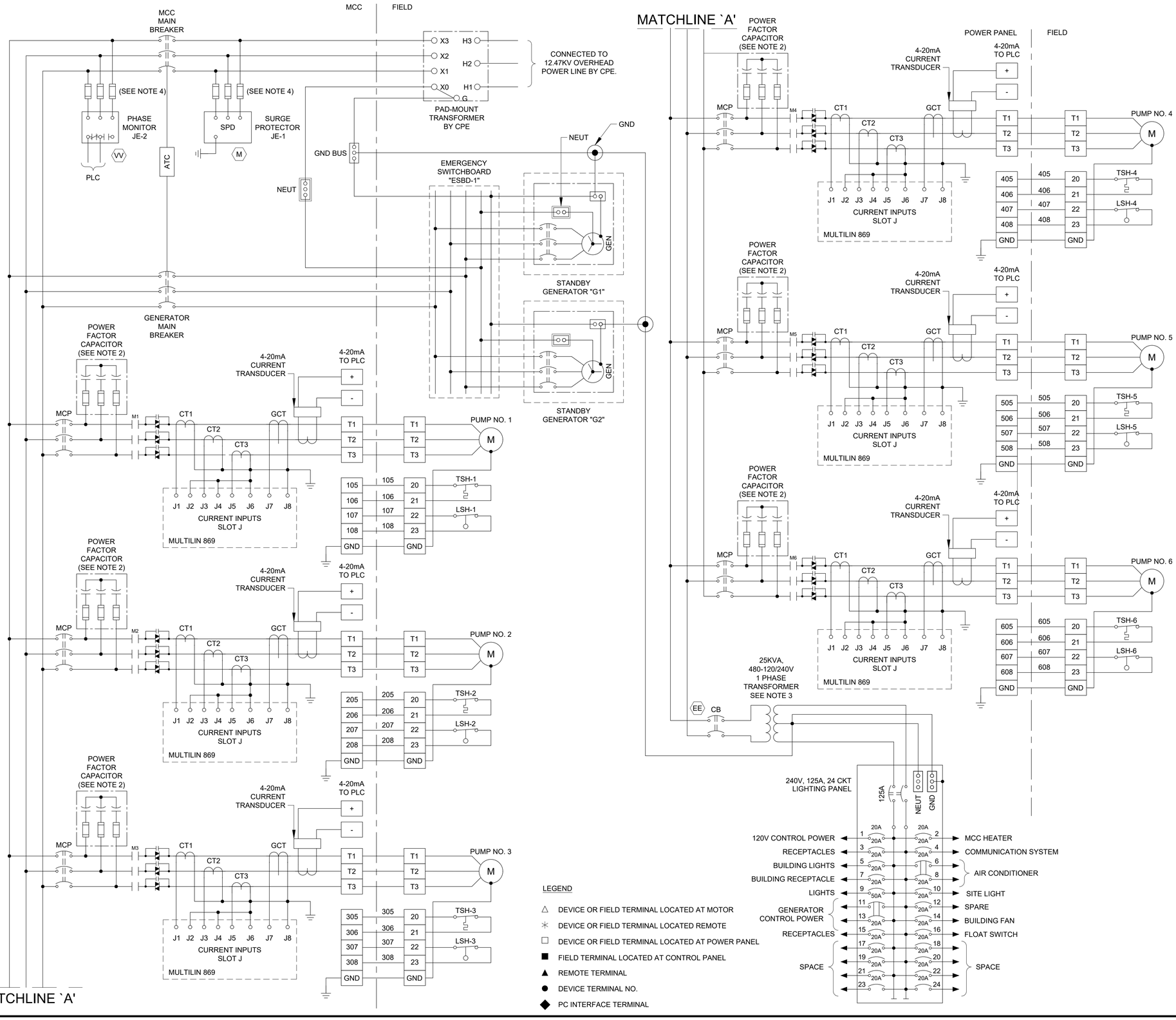
HORIZ: NONE
VERT: NONE

SHEET NO. 134 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-08.dwg



NOTES:

1. UNLESS OTHERWISE INDICATE, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
2. CONTRACTOR TO COORDINATE POWER FACTOR CORRECTION CAPACITOR SIZE WITH PUMP MANUFACTURER.
3. CONTRACTOR SHALL TERMINATE POWER & CONTROL WIRES PER MANUFACTURER'S REQUIREMENTS.
4. PROVIDE FUSE SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.
5. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
THREE-LINE DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-309

HORIZ: NONE
VERT: NONE

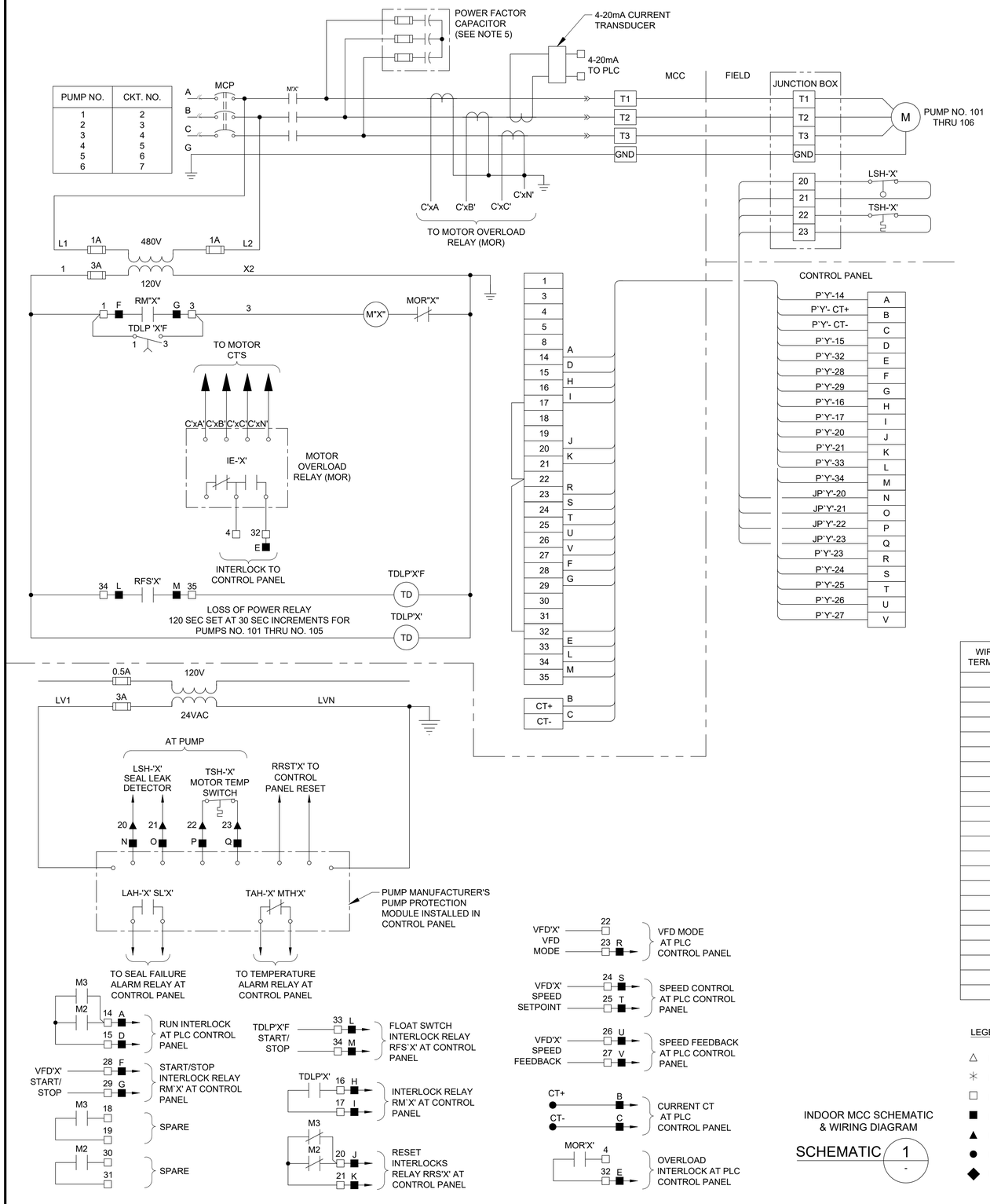
SHEET NO. 135 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:35 PM PEN TABLE: Z_PUB_WKS_H.ctb
FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-09.dwg



PUMP NO.	CKT. NO.
1	2
2	3
3	4
4	5
5	6
6	7

INDOOR MCC SCHEMATIC & WIRING DIAGRAM

SCHEMATIC 1 / -

NOTES:

1. THE 'X' NOTATION IN SCHEMATIC DESIGNATIONS REPRESENTS APPLICABLE PUMP NO. 101, 102, 103, 104, 105, 106.
2. THE 'Y' NOTATION INDICATES MCC CIRCUIT NUMBER.
3. UNLESS OTHERWISE INDICATED, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE MOTOR CONTROL CENTER (MCC).
4. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED. OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. (VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.)

WIRE TAG OR TERMINAL LABEL	PUMP NO. 101	PUMP NO. 102	PUMP NO. 103	PUMP NO. 104	PUMP NO. 105	PUMP NO. 106	FUNCTION
A	3P1	3P2	3P3	3P4	3P5	3P6	24VDC CONTROL
B	124	224	324	424	524	624	4-20mA CURRENT TRANSDUCER
C	125	225	325	425	525	625	4-20mA CURRENT TRANSDUCER
D	116	216	316	416	516	616	M CONTACT
E	117	217	317	417	517	617	OVERLOAD ALARM
F	114	214	314	414	514	614	RUN INTERLOCK
G	115	215	315	415	515	615	RUN INTERLOCK
H	102	202	302	402	502	602	LOSS OF POWER TIMER
I	103	203	303	403	503	603	LOSS OF POWER TIMER
J	118	218	318	418	518	618	ALARM RESET INTERLOCK
K	119	219	319	419	519	619	ALARM RESET INTERLOCK
L	126	226	326	426	526	626	FLOAT SWITCH RUN INTERLOCK
M	127	227	327	427	527	627	FLOAT SWITCH RUN INTERLOCK
N	120	220	320	420	520	620	SEAL LEAK DETECTOR
O	121	221	321	421	521	621	SEAL LEAK DETECTOR
P	122	222	322	422	522	622	MOTOR TEMPERATURE SWITCH
Q	123	223	323	423	523	623	MOTOR TEMPERATURE SWITCH
R	109	209	309	409	509	609	VFD MODE
S	110	210	310	410	510	610	4-20mA VFD SPEED CONTROL
T	111	211	311	411	511	611	4-20mA VFD SPEED CONTROL
U	112	212	312	412	512	612	4-20mA VFD SPEED INDICATION
V	113	213	313	413	513	613	4-20mA VFD SPEED INDICATION

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:35 PM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
MCC SCHEMATIC & WIRING DIAGRAM

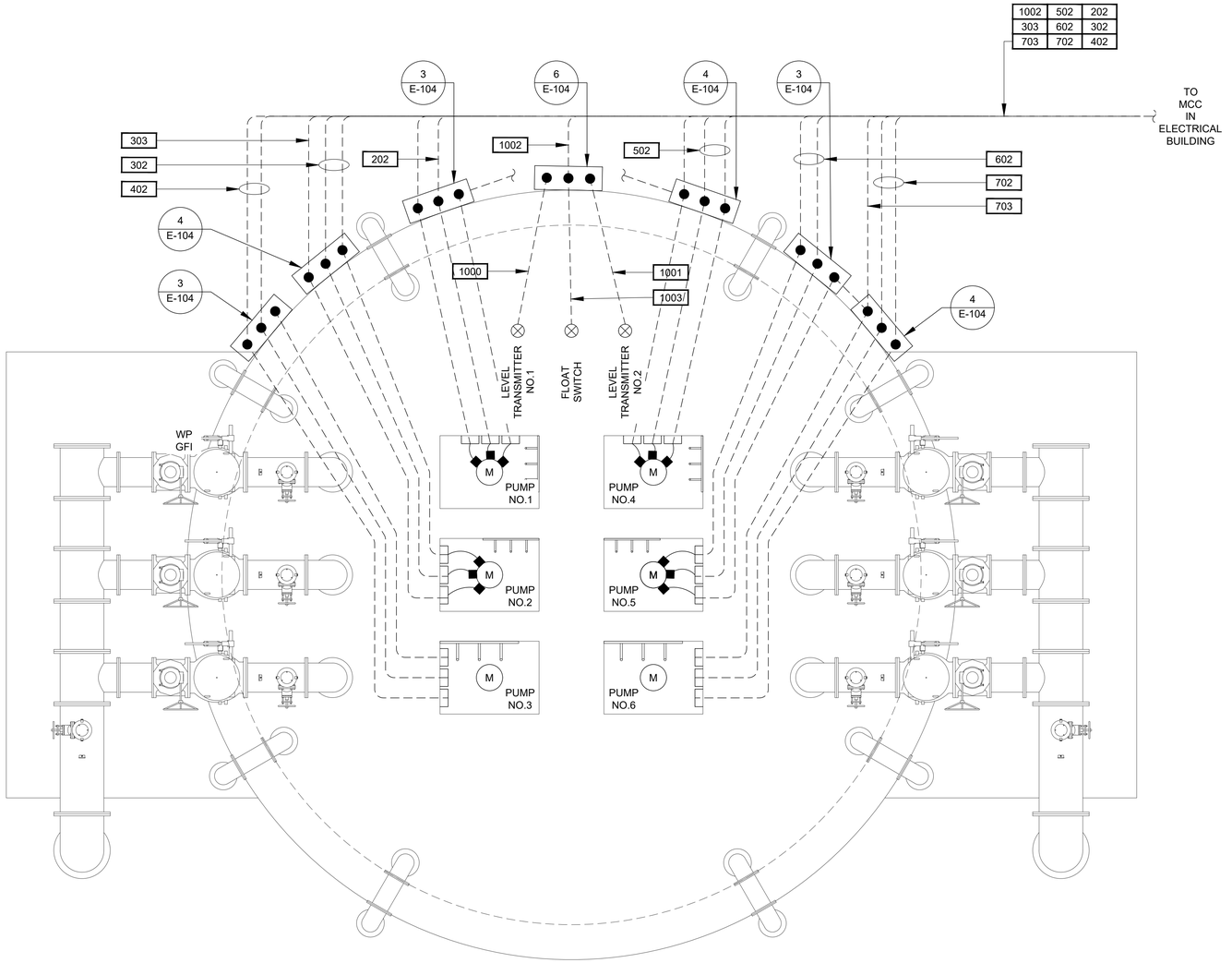
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-310
HORIZ: NONE
VERT: NONE
SHEET NO. 136 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\W8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-10.dwg



MAGNOLIA PARK LIFT STATION
ENLARGED PLAN

PLAN

1/4"=1'-0"

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

MAGNOLIA PARK
LIFT STATION
ENLARGED PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

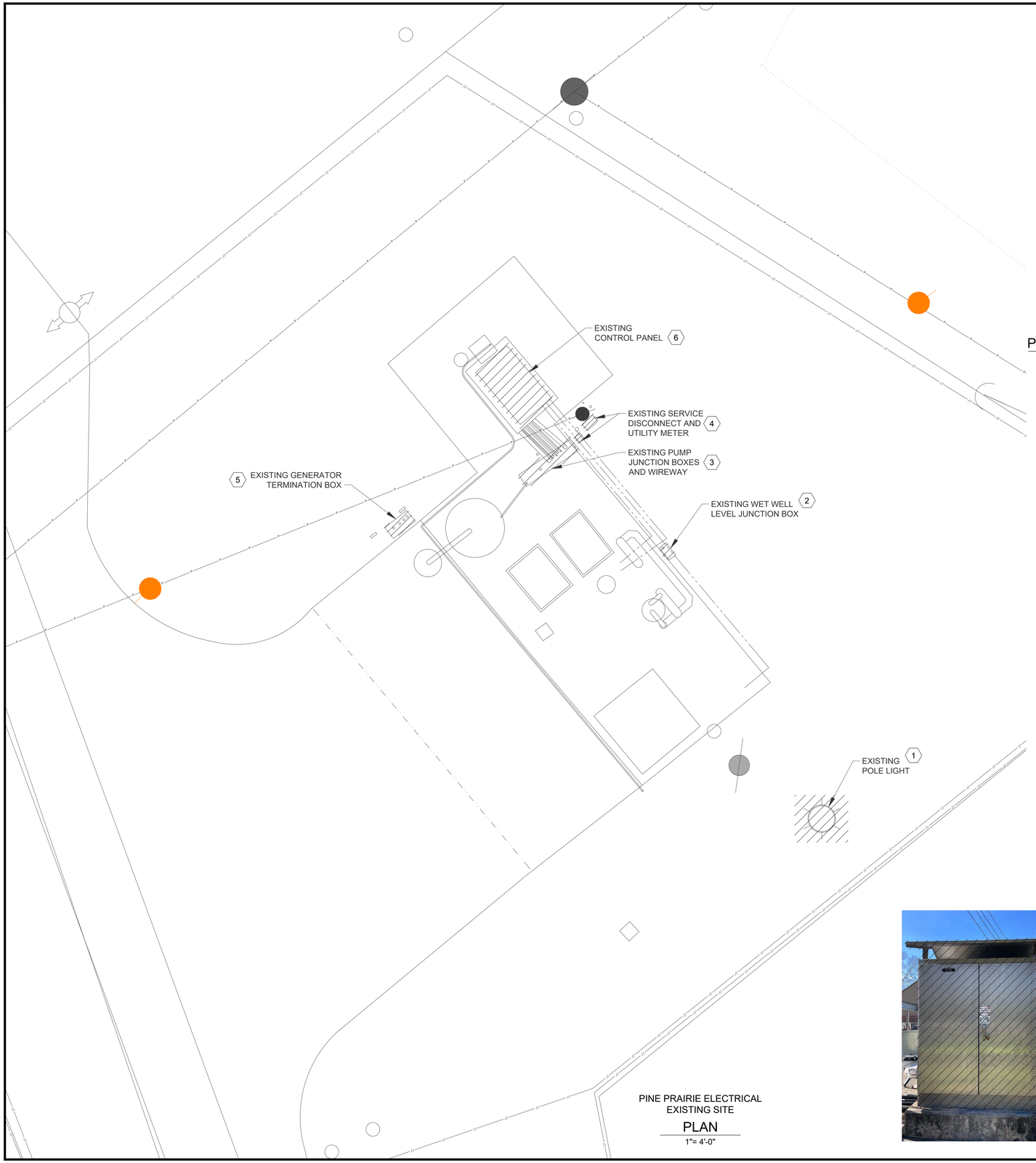
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

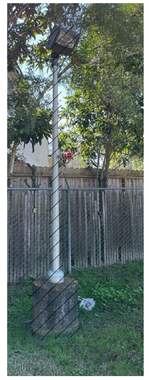
DRAWING NO. E-311	HORIZ: 1/4"=1'-0" VERT: 1/4"=1'-0"
SHEET NO. 137 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Magnolia Park\Magnolia Park_E-11.dwg



PINE PRAIRIE ELECTRICAL
EXISTING SITE
PLAN
1"= 4'-0"



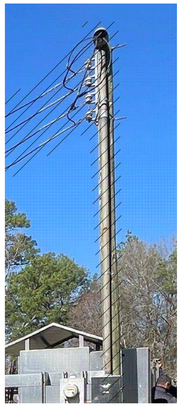
EXISTING POLE LIGHT
PHOTOGRAPH A
NTS -



EXISTING WET WELL LEVEL JUNCTION BOX
PHOTOGRAPH B
NTS -

NOTES BY SYMBOL "#":

1. EXISTING POLE LIGHT TO BE DEMOLISHED AND REMOVED.
2. EXISTING WET WELL LEVEL JUNCTION BOX TO BE DEMOLISHED AND REMOVED.
3. EXISTING PUMP JUNCTION BOXES & WIREWAY TO BE DEMOLISHED AND REMOVED.
4. EXISTING SERVICE DISCONNECT & UTILITY METER TO BE DEMOLISHED AND REMOVED.
5. EXISTING GENERATOR DISCONNECT TO BE DEMOLISHED AND REMOVED.
6. EXISTING CONTROL PANEL TO BE DEMOLISHED AND REMOVED.
7. EXISTING SERVICE RISER TO BE DEMOLISHED AND REMOVED.



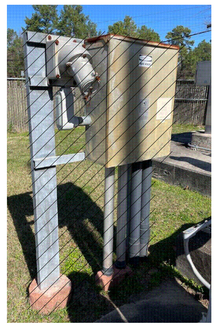
EXISTING SERVICE RISER
PHOTOGRAPH G
NTS -



EXISTING PUMP JUNCTION BOXES & WIREWAY
PHOTOGRAPH C
NTS -



EXISTING SERVICE DISCONNECT & UTILITY METER
PHOTOGRAPH D
NTS -



EXISTING GENERATOR DISCONNECT
PHOTOGRAPH E
NTS -



EXISTING CONTROL PANEL
PHOTOGRAPH F
NTS -

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

PLOTTED: 8/5/2025 10:44 AM

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
DEMOLITION SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-401

HORIZ: 1"=4'-0"
VERT: 1"=4'-0"

SHEET NO. 138 OF 225

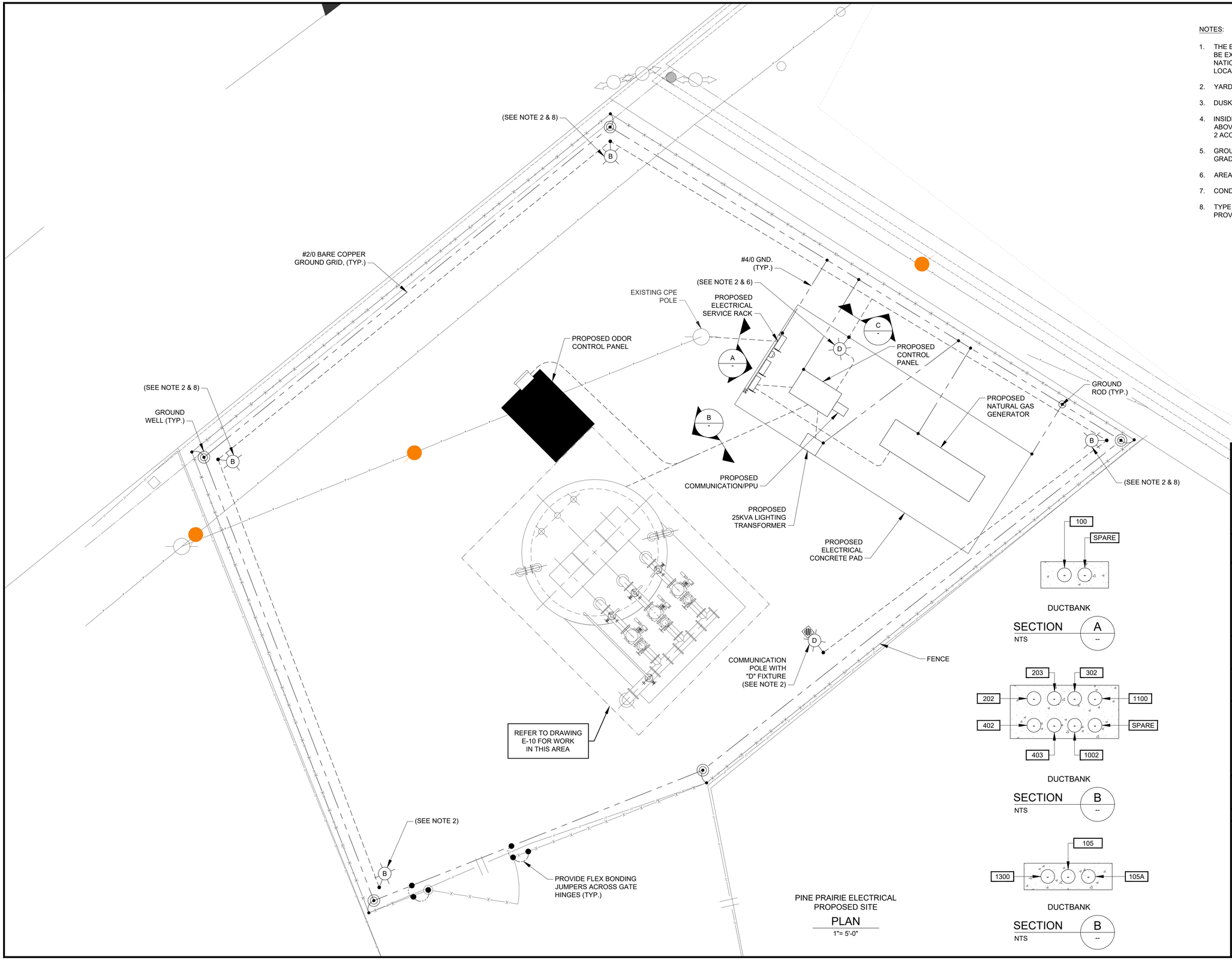
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-01.dwg

NOTES:

1. THE ELECTRICAL INSTALLATION IN THE WET WELL SHALL BE EXPLOSION PROOF, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE FOR CLASS I, DIVISION 1 LOCATIONS.
2. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. DUSK TO DAWN PHOTOCELL CONTROL.
4. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1. OUTSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.
5. GROUNDING LOOP SHALL BE BURIED 30" BELOW FINISHED GRADE.
6. AREA LIGHTING MOUNTED ON PLATFORM.
7. CONDUIT TO BE INSTALLED BELOW PLATFORM.
8. TYPE "B" FIXTURE TO BE INSTALLED ON THE POLE PROVIDING WIRES FOR THE "B" LIGHT.



PINE PRAIRIE ELECTRICAL
PROPOSED SITE
PLAN
1"= 5'-0"

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
PROPOSED SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

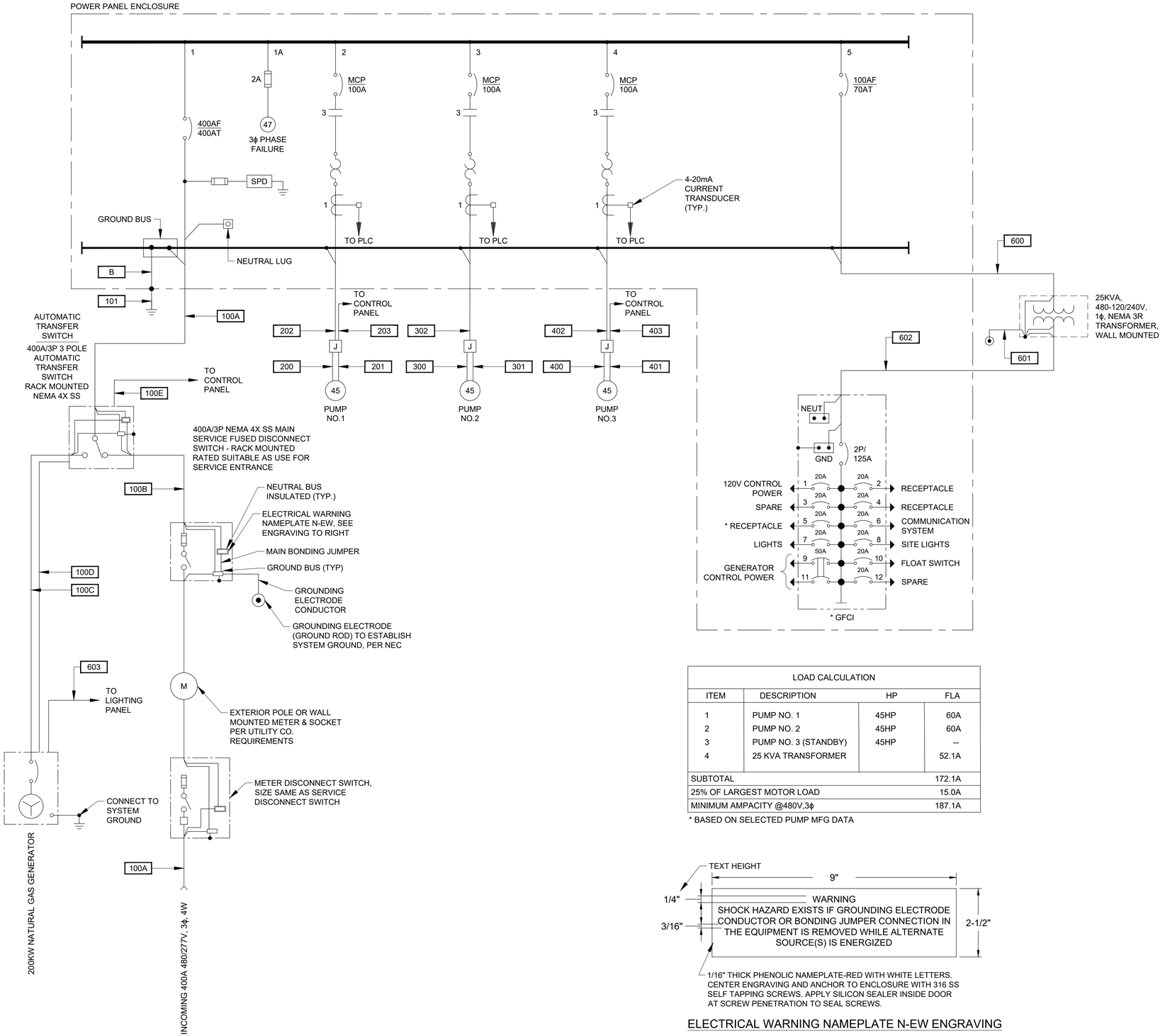
DRAWING NO. E-402	HORIZ: 1"=5'-0" VERT: 1"=5'-0"
SHEET NO. 139 OF 225	DRAWING SCALE

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NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:35 PM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-02.dwg



LOAD CALCULATION			
ITEM	DESCRIPTION	HP	FLA
1	PUMP NO. 1	45HP	60A
2	PUMP NO. 2	45HP	60A
3	PUMP NO. 3 (STANDBY)	45HP	--
4	25 KVA TRANSFORMER		52.1A
SUBTOTAL			172.1A
25% OF LARGEST MOTOR LOAD			15.0A
MINIMUM AMPACITY @480V,3ϕ			187.1A

* BASED ON SELECTED PUMP MFG DATA

1/16" THICK PHENOLIC NAMEPLATE-RED WITH WHITE LETTERS. CENTER ENGRAVING AND ANCHOR TO ENCLOSURE WITH 316 SS SELF TAPPING SCREWS. APPLY SILICON SEALER INSIDE DOOR AT SCREW PENETRATION TO SEAL SCREWS.

ELECTRICAL WARNING NAMEPLATE N-EW ENGRAVING

NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:35 PM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
ONE-LINE DIAGRAM

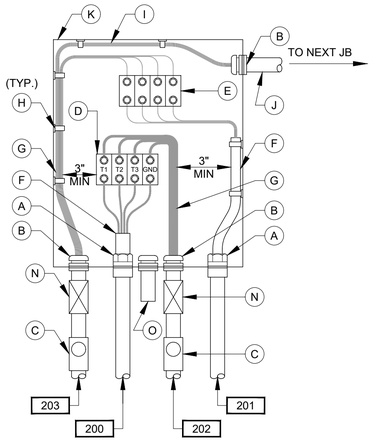
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

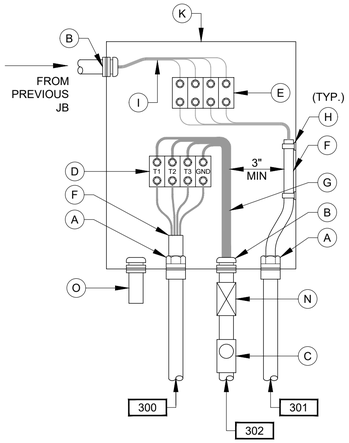
DRAWING NO. E-403
HORIZ: NONE
VERT: NONE
SHEET NO. 140 OF 225
DRAWING SCALE
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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-03.dwg



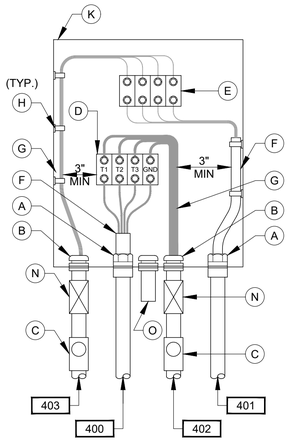
PUMP NO.1
JUNCTION BOX

DETAIL 3
NTS
(SEE NOTE 7)



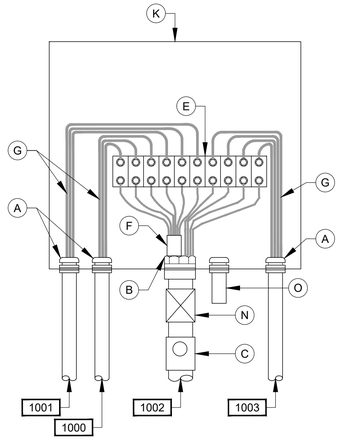
PUMP NO.2
JUNCTION BOX

DETAIL 4
NTS
(SEE NOTE 7)



PUMP NO.3
JUNCTION BOX

DETAIL 5
NTS
(SEE NOTE 7)

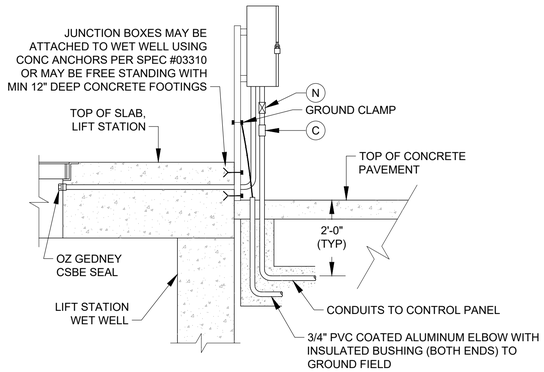


LEVEL TRANSMITTER
JUNCTION BOX

DETAIL 6
NTS
(SEE NOTE 7)

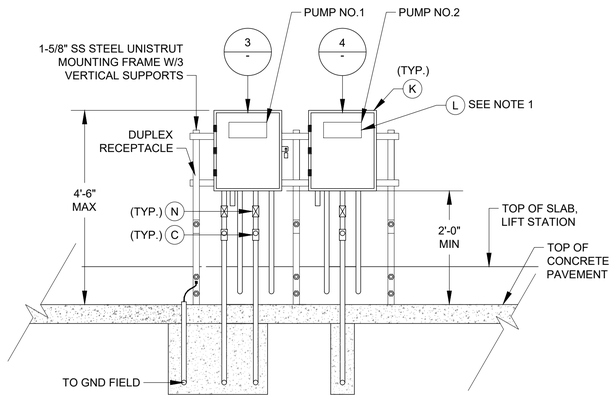
NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO JUNCTION BOXES USING 316 STAINLESS STEEL HARDWARE.
2. MAINTAIN MINIMUM SEPARATION REQUIRED UNDER NEC ARTICLE 504, BETWEEN INTRINSICALLY SAFE CONTROL WIRING AND NON INTRINSICALLY SAFE MOTOR FEEDER WIRING.
3. UNLESS OTHERWISE NOTED, ALL EXTERIOR EXPOSED CONDUITS SHALL BE PVC COATED ALUMINUM.
4. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS WASHERS, ETC SHALL BE TYPE 316 STAINLESS STEEL.
5. ALL UNDERGROUND CONDUITS TO BE ENCASED IN REINFORCED CONCRETE DUCTBANK.
6. PROVIDE ANTI-CORROSIVE SPRAY ON ANY BARE METAL PARTS OR EXPOSED WIRE.
7. SEE WIRING SCHEMATICS FOR TERMINALS AND WIRE NUMBERS.
8. ANY CONDUIT REQUIRING A CSBE SEAL, SHALL BE A MINIMUM SIZE OF 2 1/2" PER CABLE.
9. DETAIL SHOWN MAY BE MODIFIED PER SITE SITUATION.
10. COORDINATE WITH WASTE WATER OPERATIONS ELECTRICAL ORGANIZATION FOR THE OPENING OF JUNCTION BOXES TO THE SIDE OF WET WELL IF REQUIRED DURING CONSTRUCTION.
11. THE ENCLOSURES WITH ELECTRICAL CIRCUITS SHALL BE A MINIMUM OF 5 FEET FROM ANY CLASSIFIED AREA, OTHERWISE EXPLOSION PROOF TYPE ENCLOSURES SHALL BE USED.

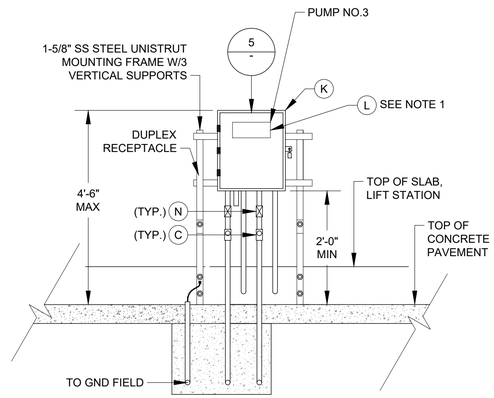


TYP SIDE VIEW FOR DETAIL 1, 2, & 7

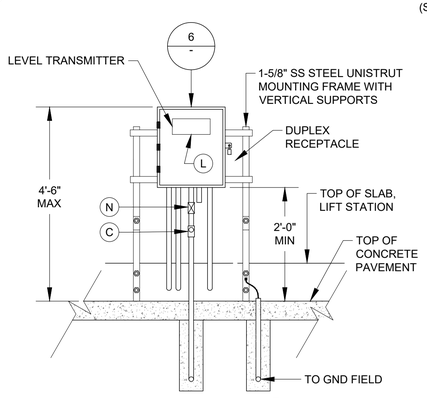
(SEE NOTE 10)



DETAIL 1
NTS
(SEE NOTE 9)



DETAIL 2
NTS
(SEE NOTE 9)



DETAIL 7
NTS
(SEE NOTE 9)

JUNCTION BOX EQUIPMENT SCHEDULE

A - OZ GEDNEY CSBE SEAL
B - WATERTIGHT CONDUIT HUB WITH INSULATED BUSHING
C - CLASS I, DIV 1, EXPLOSION PROOF SEAL INSTALLED PER NEC DIV 501
D - POWER TERMINAL BLOCK W/SCREW DOWN BOX LUGS
E - CONTROL TERM BLOCK W/SCREW DOWN BOX LUGS
F - MULTI-CONDUCTOR CABLE, REMOVE OUTER JACKET AS SHOWN
G - WIRING AS SCHEDULED
H - WIRING HARNESS PERMANENTLY AFFIXED
I - PUMP CONTROL WIRING FROM PUMP NO.1 TO NO.2
J - 1-1/2" PVC COATED CONDUIT NIPPLE
K - NEMA 6P STAINLESS STEEL JUNCTION BOX WITH GASKETED FRONT COVER, SINGLE QUARTER TURN, OIL-TIGHT LATCH AND PADLOCKING PROVISIONS, MINIMUM SIZE: 12"W X 16"H X 6"D
L - NAMEPLATE, SEE SPECIFICATIONES (SEE NAMEPLATE SCHEDULE)
M - NOT USED.
N - EXPANSION FITTING
O - DRAIN VENT

NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:35 PM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
JUNCTION BOX DETAILS

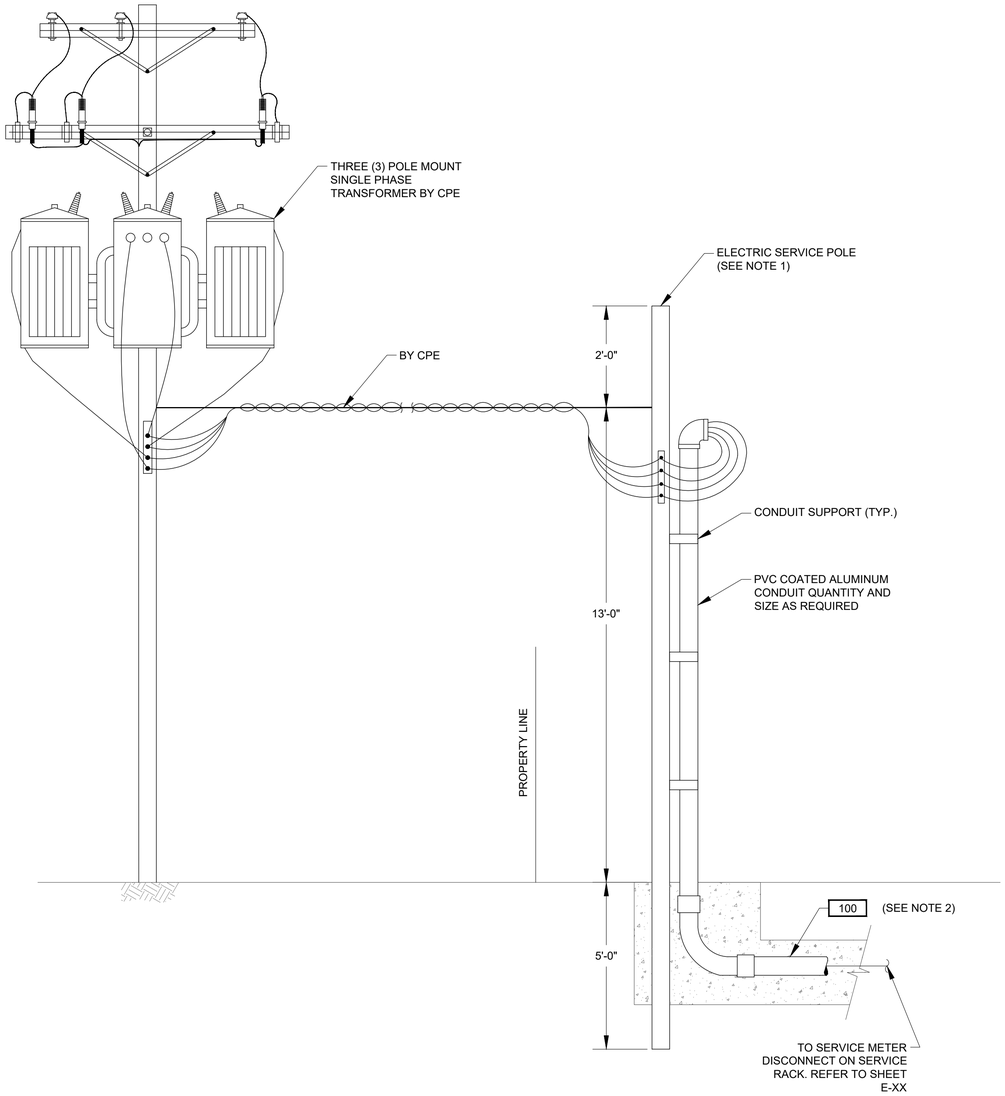
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-404
HORIZ: NONE
VERT: NONE
SHEET NO. 141 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-04.dwg



ELECTRICAL SERVICE ENTRANCE

DETAIL 1
NTS. -

NOTES:

1. WOODEN POLE 20' LONG. TOP DIAMETER 6", BOTTOM DIAMETER 8" PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
2. ELECTRICAL SERVICE FEEDER PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. COORDINATE WITH CPE FOR THE REQUIREMENTS OF THE INSTALLATION.

NO.	DATE	REVISION	APP.

GAI
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
SERVICE POLE DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

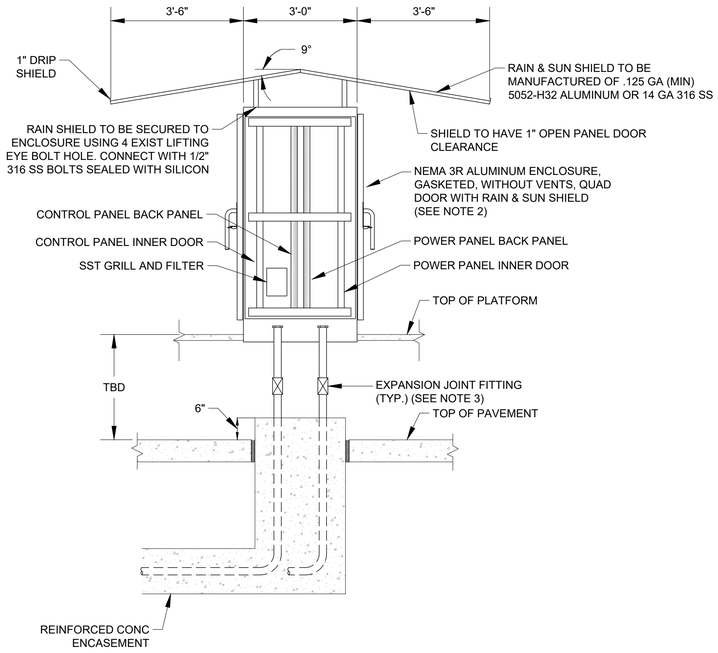
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

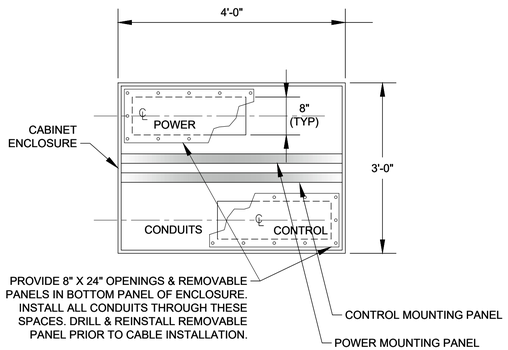
DRAWING NO. E-405
HORIZ: NONE
VERT: NONE
SHEET NO. 142 OF 225
DRAWING SCALE
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PLOTTED: 7/23/2025 1:35 PM PEN TABLE: Z_PUB_WKS_H.ctb

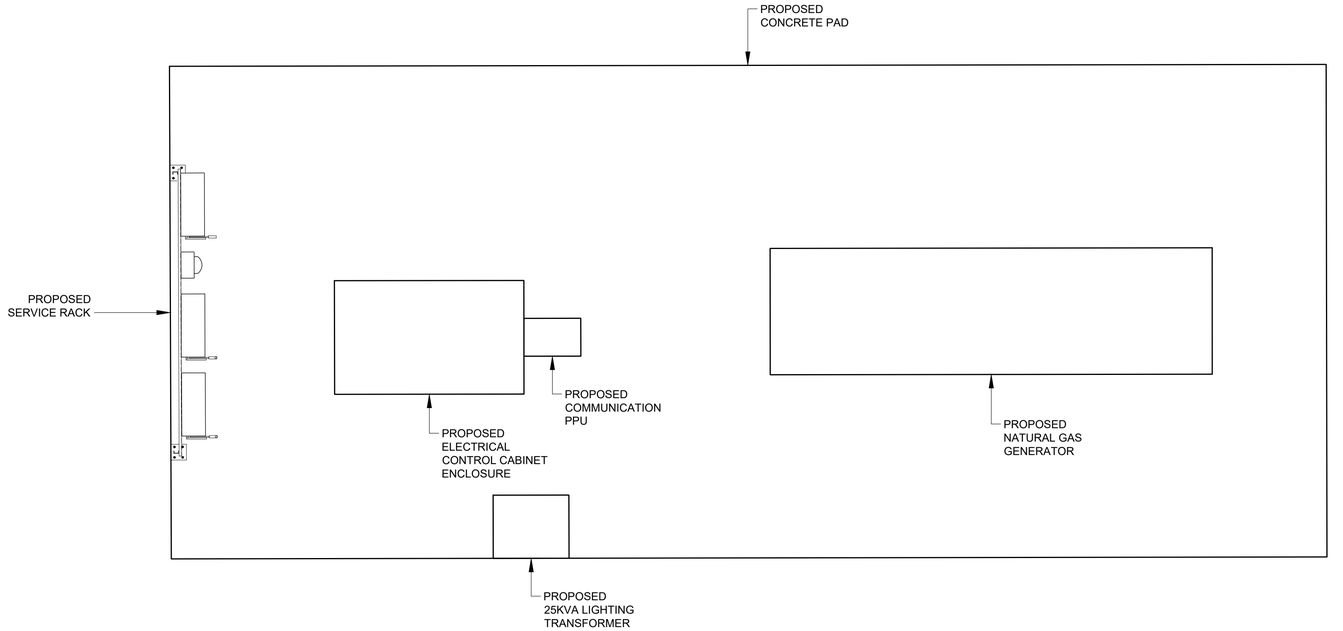
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CONTROL CABINET ENCLOSURE ON CONCRETE PAD



SECTION 2 (SEE NOTE 7)
NTS -



CONTROL CABINET ENCLOSURE ON ELEVATED PAD DETAIL

DETAIL 1
1/2" = 1'-0" -

NOTES:

1. SEE SHEET I-XX FOR EQUIPMENT SCHEDULE.
2. REFER TO SPEC 13325-8 FOR PANEL DIMENSIONS.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. REFER TO STRUCTURAL DRAWINGS .
6. CONDUIT TO BE MOUNTED BELOW PLATFORM GRATING.
7. ALL CONDUITS ENTERING THE CABINET SHALL BE BOTTOM ENTRY.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
CONTROL PANEL DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-406	HORIZ: NONE VERT: NONE
SHEET NO. 143 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-06.dwg

	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
A	MAIN BONDING JUMPER	--	--	MAIN FUSED DISCONNECT NEUTRAL	MAIN FUSED DISCONNECT GROUND	--	#2 CU GND.
B	EQUIPMENT BONDING JUMPER	--	--	MCC/POWER PANEL ENCLOSURE	POWER/CONTROL PANEL & EQUIPMENT	--	#2 CU GND.
C	GROUNDED ELECTRODE CONDUCTOR	--	--	GROUNDING ELECTRODE	MAIN SERVICE FUSED DISCONNECT GROUNDING	--	#2 CU GND.
100	SERVICE ENTRANCE	480V	400A	AUTOMATIC TRANSFER SWITCH	POWER PANEL		3 #500 MCM., #2 NEUT., #2 GND., 4" C.
100A	MCC SERVICE POWER	480V	400A	AUTOMATIC TRANSFER SWITCH	MAIN SERVICE FUSED SWITCH	--	3 #500 MCM., #2 NEUT., #2 GND., 4" C.
100B	UTILITY POWER ENTRANCE	480V	400A	GENERATOR	AUTOMATIC TRANSFER SWITCH	--	3 #500 MCM., #2 NEUT., #2 GND., 4" C.
100C	EMERGENCY POWER	24VDC	--	AUTOMATIC TRANSFER SWITCH	GENERATOR	CAPPED CONDUITS	3 #500 MCM., #2 NEUT., #2 GND., 4" C.
100D	GENERATOR START/FAIL LOW FUEL SIGNALS	120V	--	AUTOMATIC TRANSFER SWITCH	CONTROL PANEL	--	8#14 AWG., 1"C.
100E	GROUND ELECTRODE CONDUCTOR	--	--	POWER PANEL	GROUND FIELD	--	#2/0 GND.
102	GROUND ELECTRODE CONDUCTOR	--	--	BUILDING STEEL	GROUND FIELD	--	#2/0 GND.
103	BUILDING GROUNDING	--	--	BUILDING REBAR	LIGHTNING GROUND ROD	--	#2/0 GND.
104	GROUND ELECTRODE CONDUCTOR	--	--	CONTROL PANEL	GROUND FIELD	--	#2/0 GND.
105	COMMUNICATION	--	--	COMMUNICATION POLE	CONTROL PANEL	--	1-1/2"C. CAT 5E
105A	COMMUNICATION POLE LIGHT	120V	--	COMMUNICATION POLE	LIGHTING PANEL	--	2#12, #12G, 1"C.
200	PUMP NO. 1 POWER	480V	45 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
201	PUMP NO. 1 CONTROLS	120V	--	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
202	PUMP NO. 1 POWER	480V	45 HP	PUMP NO. 1 JUNCTION BOX	PUMP STARTER	--	3#3, #6 GND., 1-1/2"C.
203	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 1 JUNCTION BOX	PUMP STARTER	COMBINE PUMP 1 & 2 CONTROLS	COMBINE 200 & 300 TAG WIRING, 8#14, 1"C.
300	PUMP NO. 2 POWER	480V	45 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
301	PUMP NO. 2 CONTROLS	120V	--	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
302	PUMP NO. 2 POWER	480V	45 HP	PUMP NO. 2 JUNCTION BOX	PUMP STARTER	--	3#4, #6 GND., 2"C.
400	PUMP NO. 3 POWER	480V	45 HP	PUMP NO. 3	PUMP NO. 3 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
401	PUMP NO. 3 CONTROLS	120V	--	PUMP NO. 3	PUMP NO. 3 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
402	PUMP NO. 3 POWER	480V	45 HP	PUMP NO. 3 JUNCTION BOX	PUMP STARTER	--	3#3, #6 GND., 1-1/2"C.
403	PUMP NO. 3 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	4#14, 1"C.
600	LIGHTING PANEL FEEDER	480V	40A	POWER PANEL	LIGHTING TRANSFORMER	--	2#4, #6 GND., 1-1/2"C.
601	LIGHTING PANEL GROUND	--	--	LIGHTING PANEL	GROUND FIELD	--	#6 GND., 1"C.
602	LIGHTING PANEL FEEDER	120/240V	--	LIGHTING TRANSFORMER	LIGHTING PANEL	--	3#1, #6 GND., 1-1/4" C.
603	LIGHTING PANEL FEEDER	120/240V	--	GENERATOR	LIGHTING PANEL	--	3#1, #8 GND., 1" C.
900	INTRUSION ALARM	24VDC	--	MOTION SWITCH	CONTROL PANEL	--	3#6, #8 GND., 1" C.
1000	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2"C
1001	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2"C
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2-TRI, 4#14, 2" C.
1003	WELL FLOAT SWITCHES	24VDC	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1 & NO.2	--	MANUFACTURER'S CABLE IN 2-1/2"C
1100	120VAC FOR RECEPTACLE	120VAC	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12, #12G, 3/4" C.
1200	120VAC FOR RECEPTACLE	120VAC	--	LIGHTING PANEL	RECEPTACLE ON PLATFORM	--	2#12, #12G, 3/4" C.
1300	SITE LIGHTING	120VAC	--	LIGHTING PANEL	SITE LIGHTS	SITE LIGHTING CONTROL SWITCH	2#12, #12G, 1" C.
1300A	SITE LIGHTING CONTROL	120VAC	--	LIGHTING PANEL	SITE LIGHTING CONTROL SWITCH	--	2#12, #12G, 1" C.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
CONDUIT SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-407

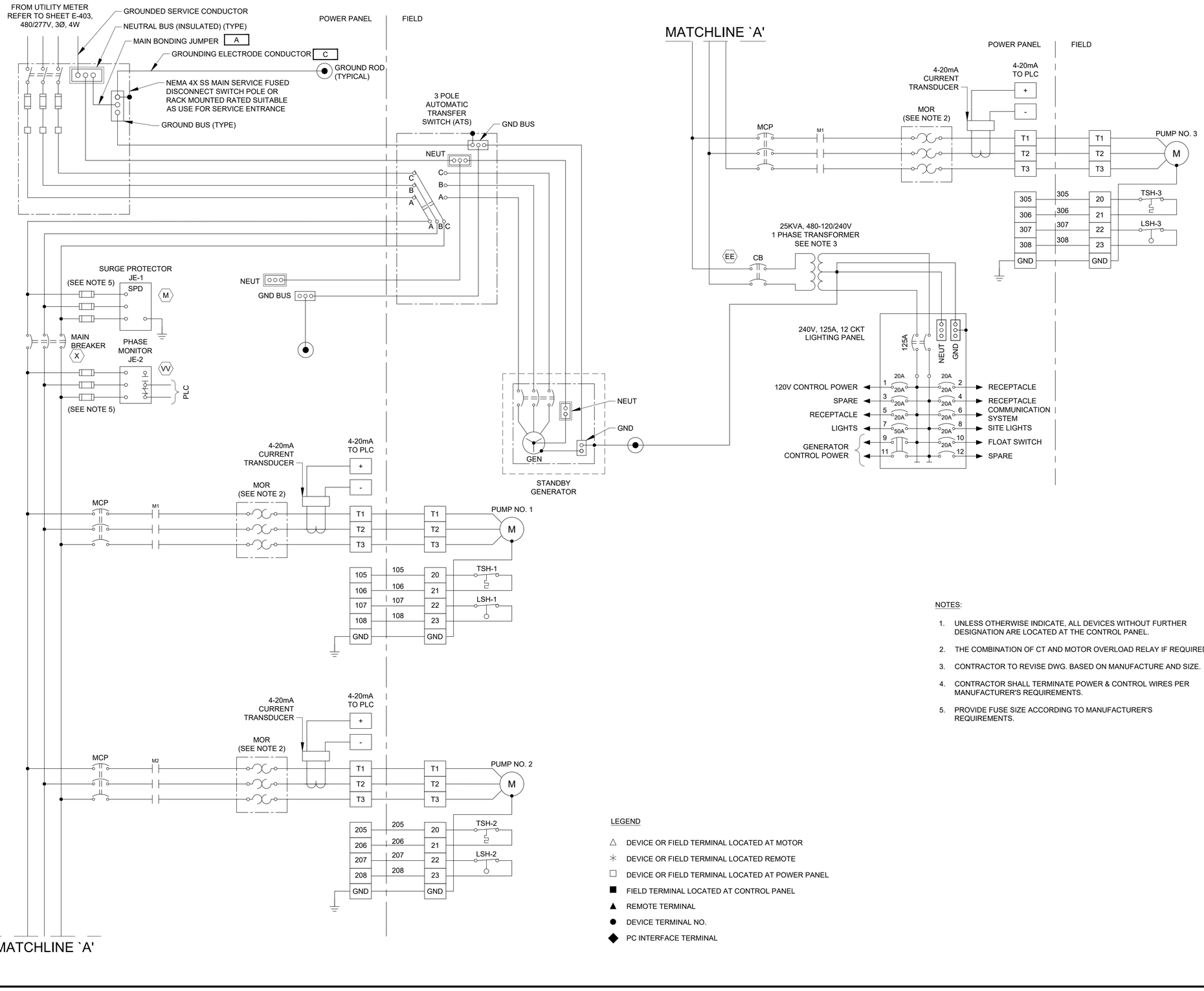
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VERT: NONE

SHEET NO. 144 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\W8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-07.dwg



NOTES:

1. UNLESS OTHERWISE INDICATE, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
2. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.
3. CONTRACTOR TO REVISE DWG. BASED ON MANUFACTURE AND SIZE.
4. CONTRACTOR SHALL TERMINATE POWER & CONTROL WIRES PER MANUFACTURER'S REQUIREMENTS.
5. PROVIDE FUSE SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
THREE-WIRE DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

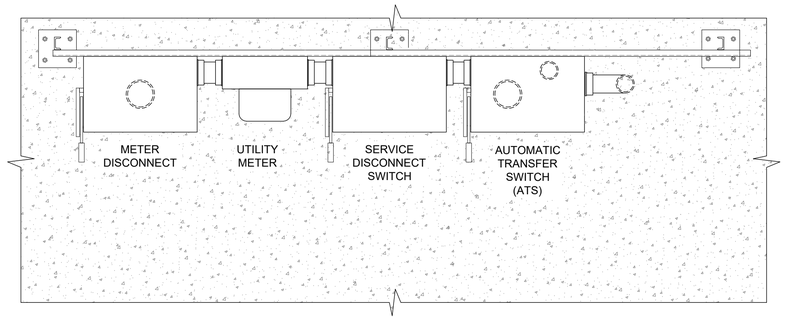
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

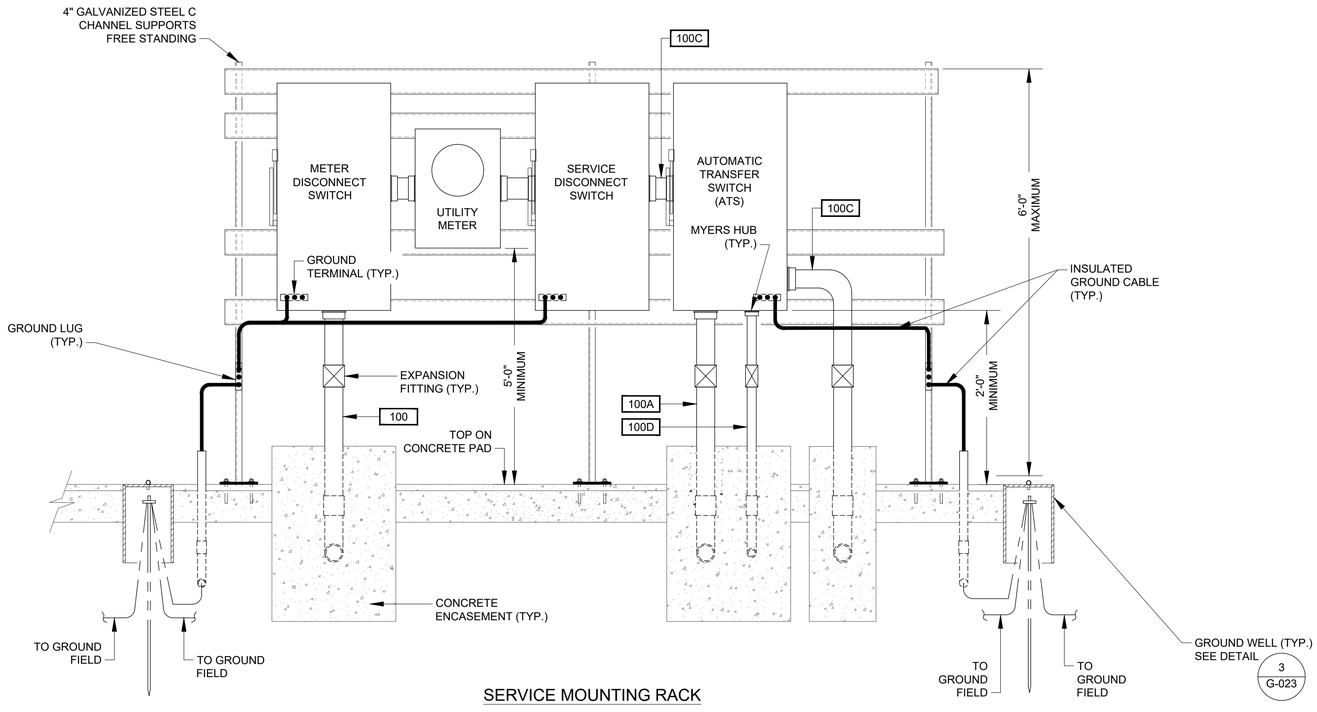
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SHEET NO. 145 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-08.dwg



PLAN



SERVICE MOUNTING RACK

DETAIL 1
NTS. -

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NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
SERVICE RACK DETAILS

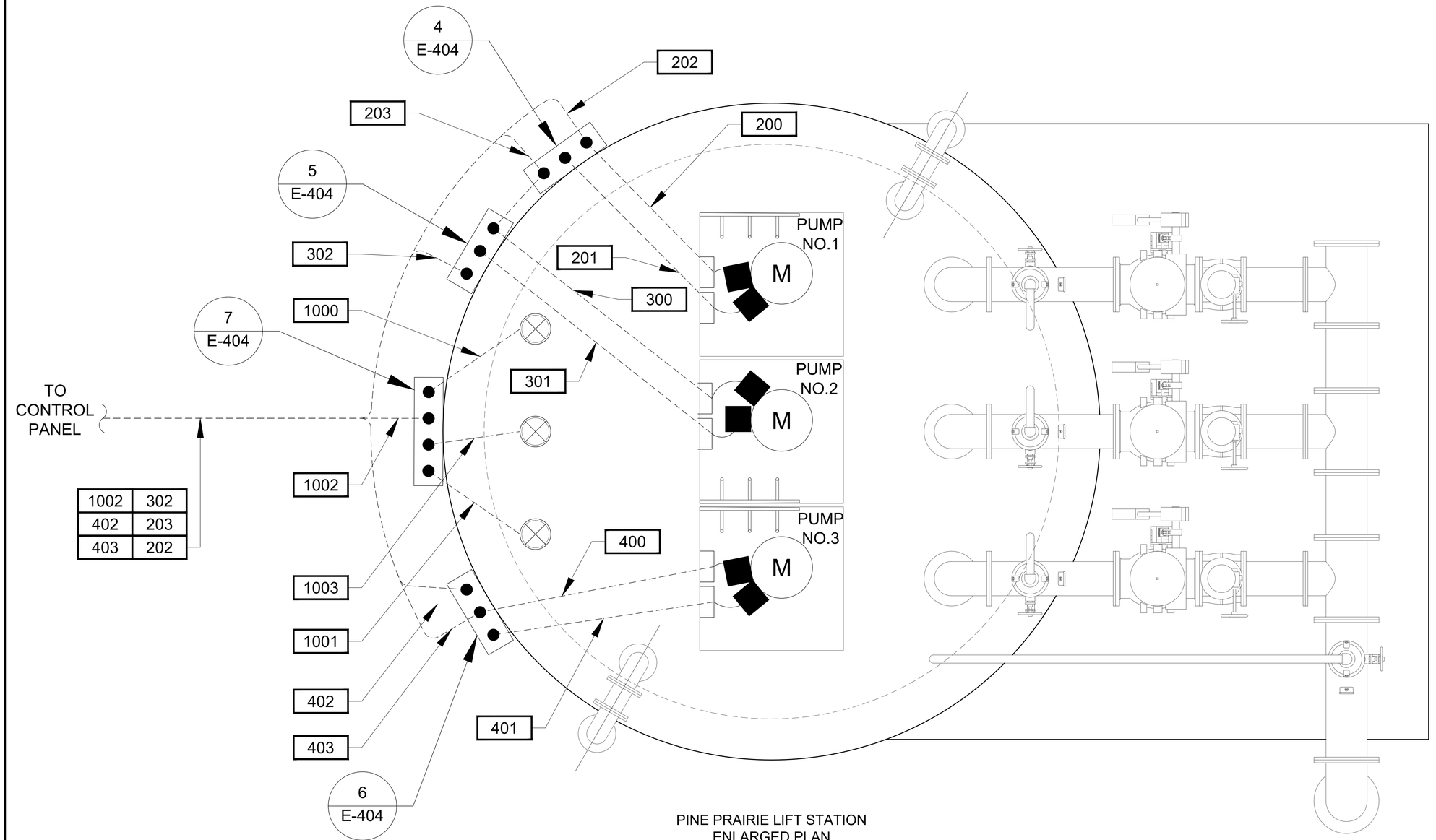
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-409
HORIZ: NONE
VERT: NONE
SHEET NO. 146 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Pine Prairie\Pine Prairie_E-09.dwg



1002	302
402	203
403	202

PINE PRAIRIE LIFT STATION
ENLARGED PLAN

PLAN

3/4"=1'-0"

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
ENLARGED PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-410

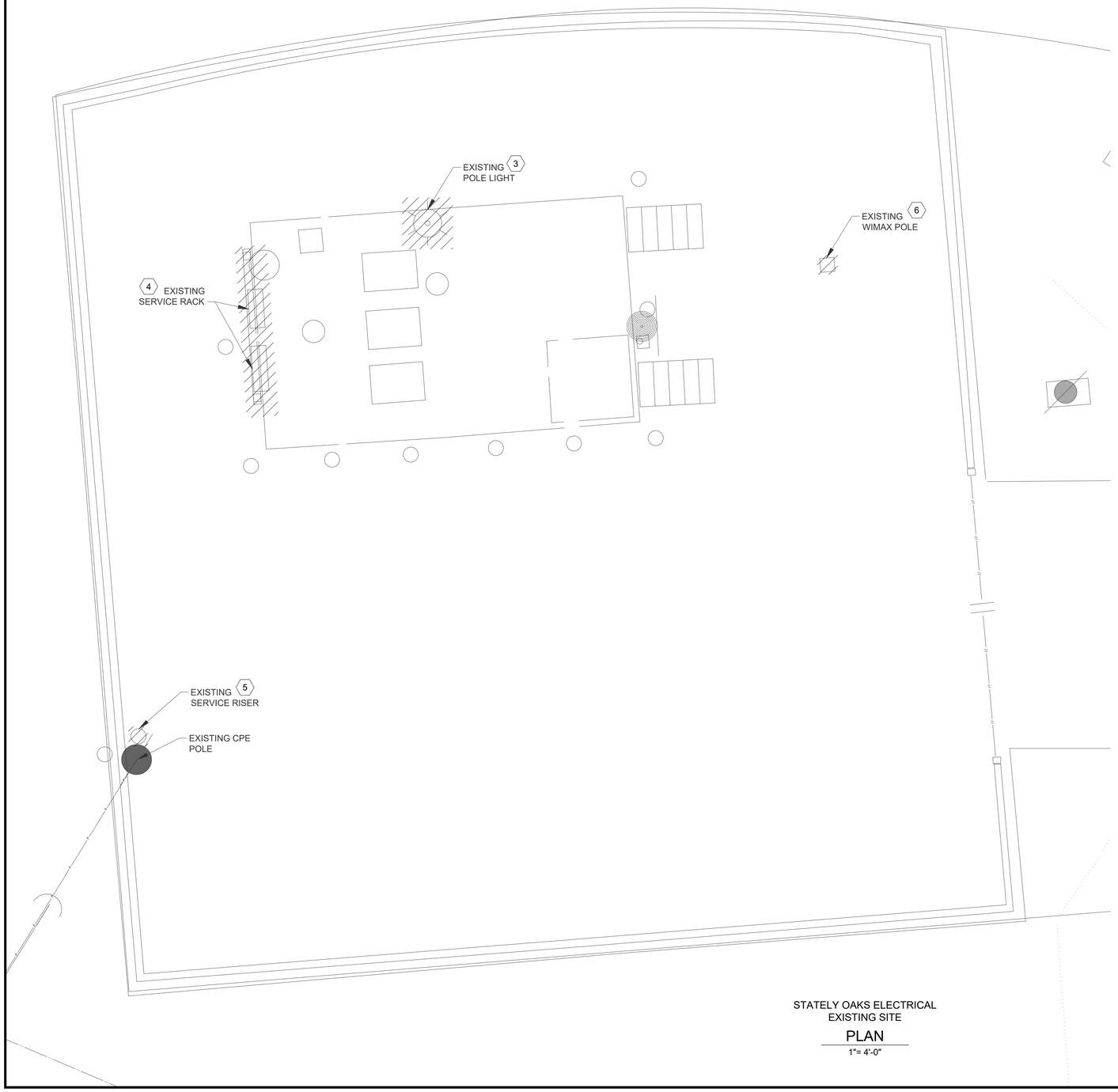
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VERT: 3/4"=1'-0"

SHEET NO. 147 OF 225

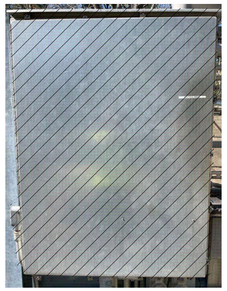
DRAWING SCALE

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STATELY OAKS ELECTRICAL
EXISTING SITE
PLAN
1"= 4'-0"



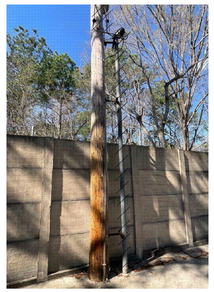
EXISTING CONTROL PANEL
PHOTOGRAPH A
NTS -



EXISTING SERVICE RACK
PHOTOGRAPH E
NTS -



EXISTING CONTROL PANEL
PHOTOGRAPH B
NTS -



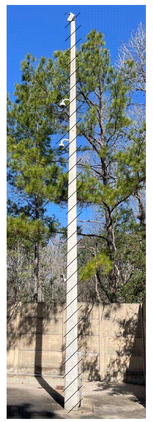
EXISTING SERVICE RISER
PHOTOGRAPH F
NTS -



EXISTING WIMAX BOX
PHOTOGRAPH C
NTS -



EXISTING POLE LIGHT
PHOTOGRAPH D
NTS -



EXISTING SERVICE RISER
PHOTOGRAPH G
NTS -

NOTES BY SYMBOL "#":

1. EXISTING CONTROL PANEL TO BE DEMOLISHED AND REMOVED.
2. EXISTING WIMAX BOX TO BE DEMOLISHED AND REMOVED.
3. EXISTING POLE LIGHT TO BE DEMOLISHED AND REMOVED.
4. EXISTING SERVICE RACK TO BE DEMOLISHED AND REMOVED.
5. EXISTING SERVICE RISER TO BE DEMOLISHED AND REMOVED.
6. EXISTING WIMAX POLE TO BE DEMOLISHED AND REMOVED.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
DEMOLITION SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

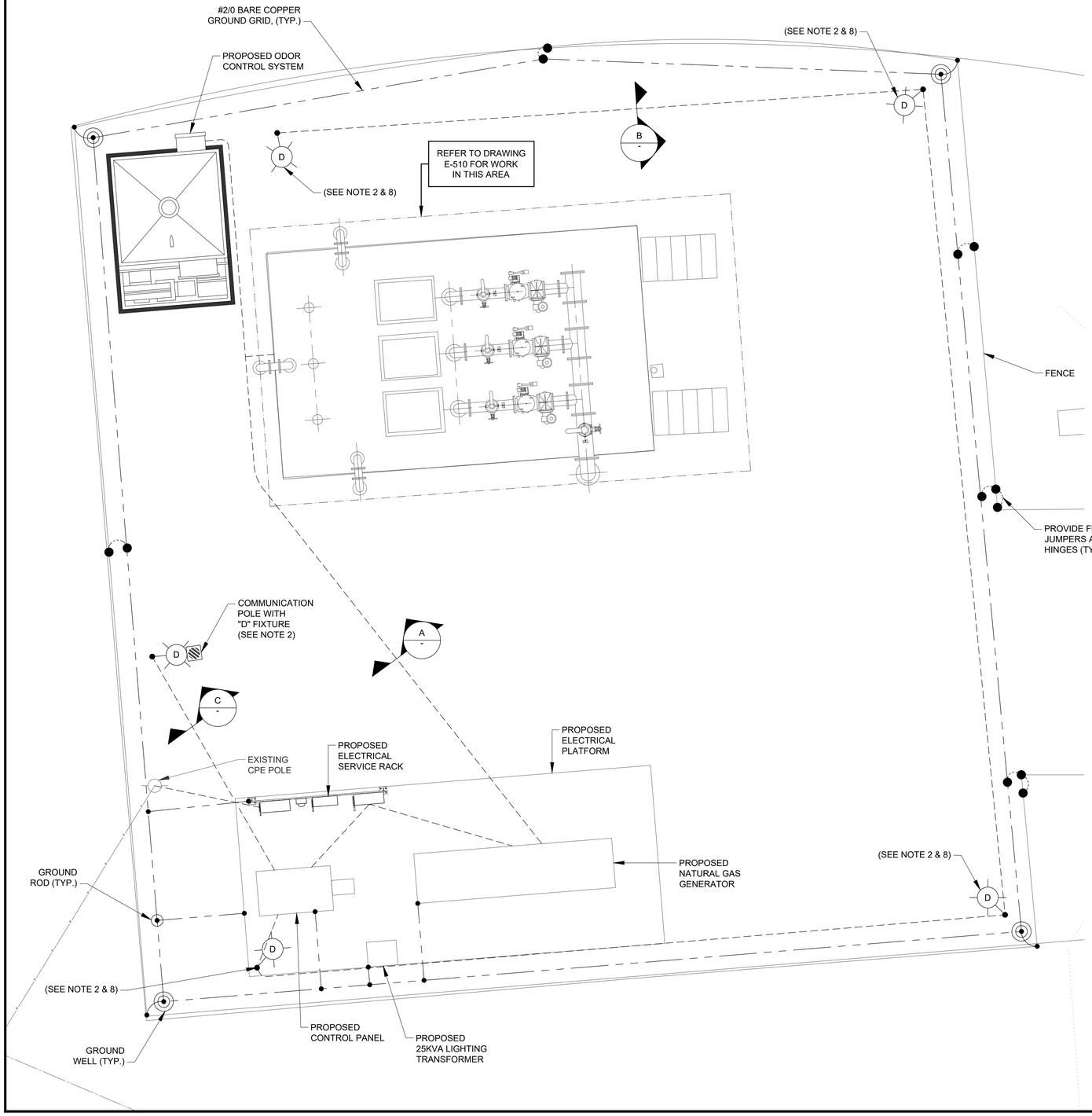
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

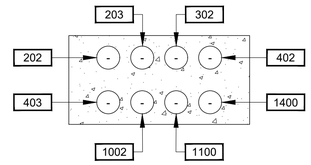
DRAWING NO. E-501
HORIZ: 1"=4'-0"
VERT: 1"=4'-0"
SHEET NO. 148 OF 225
DRAWING SCALE
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NO.	DATE	REVISION	APP.

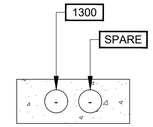
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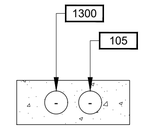
STATELY OAKS ELECTRICAL
PROPOSED SITE
PLAN
1"= 5'-0"



DUCTBANK
SECTION A
NTS



DUCTBANK
SECTION B
NTS



DUCTBANK
SECTION C
NTS

NOTES:

1. THE ELECTRICAL INSTALLATION IN THE WET WELL SHALL BE EXPLOSION PROOF, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE FOR CLASS I, DIVISION 1 LOCATIONS.
2. YARD LIGHT CONTROLLED BY LIGHTING SWITCH.
3. DUSK TO DAWN PHOTOCELL CONTROL.
4. INSIDE WETWELL RATED NEMA CLASS 1, DIV. 1. OUTSIDE ABOVE GROUND, AROUND WETWELL RATED CLASS 1, DIV. 2 ACCORDING TO NFPA 820.
5. GROUNDING LOOP SHALL BE BURIED 30" BELOW FINISHED GRADE.
6. AREA LIGHTING MOUNTED ON PLATFORM.
7. CONDUIT TO BE INSTALLED BELOW PLATFORM.
8. TYPE "B" FIXTURE TO BE INSTALLED ON THE POLE PROVIDING WIRES FOR THE "B" LIGHT.

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

PLOTTED: 7/23/2025 1:35 PM

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
PROPOSED SITE PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

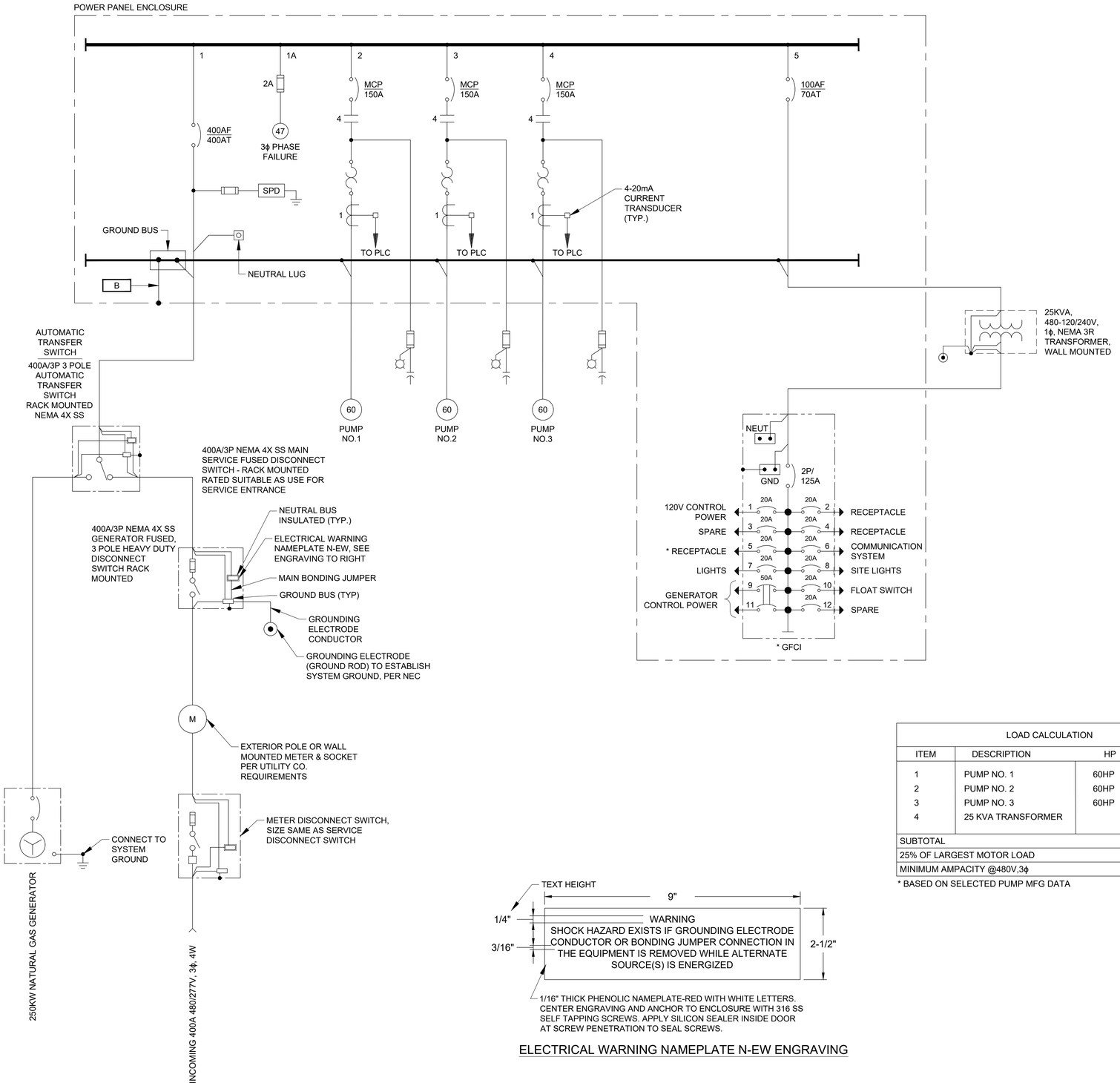
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-502	HORIZ: 1"=5'-0" VERT: 1"=5'-0"
SHEET NO. 149 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Stately Oaks\Stately Oaks_E-02.dwg



LOAD CALCULATION			
ITEM	DESCRIPTION	HP	FLA
1	PUMP NO. 1	60HP	77A
2	PUMP NO. 2	60HP	77A
3	PUMP NO. 3	60HP	77A
4	25 KVA TRANSFORMER		52.1A
SUBTOTAL			283.1A
25% OF LARGEST MOTOR LOAD			19.3A
MINIMUM AMPACITY @480V,3ϕ			302.4A

* BASED ON SELECTED PUMP MFG DATA

ELECTRICAL WARNING NAMEPLATE N-EW ENGRAVING

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
ONE-LINE DIAGRAM

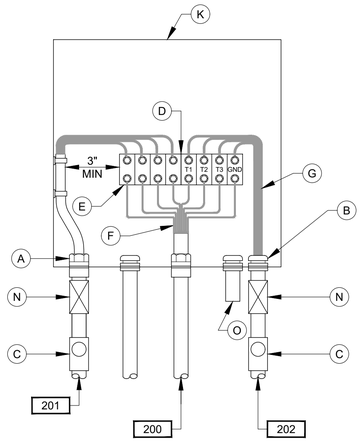
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

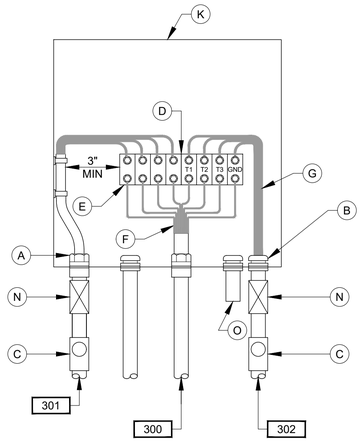
DRAWING NO. E-503
HORIZ: NONE
VERT: NONE
SHEET NO. 150 OF 225
DRAWING SCALE
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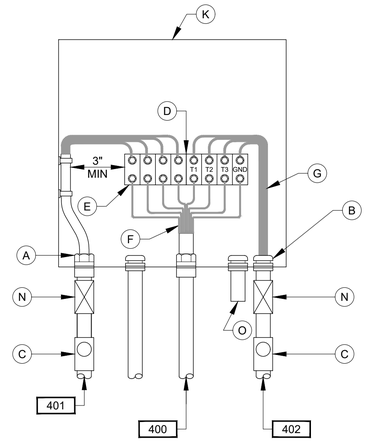
PUMP NO.1
JUNCTION BOX

DETAIL 4
NTS
(SEE NOTE 7)



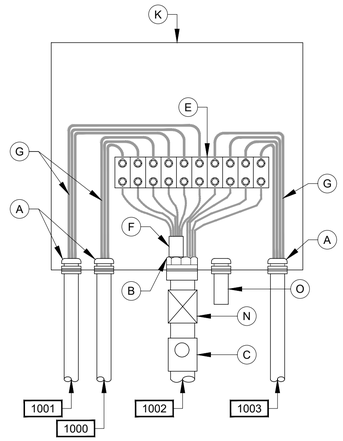
PUMP NO.2
JUNCTION BOX

DETAIL 5
NTS
(SEE NOTE 7)



PUMP NO.3
JUNCTION BOX

DETAIL 6
NTS
(SEE NOTE 7)

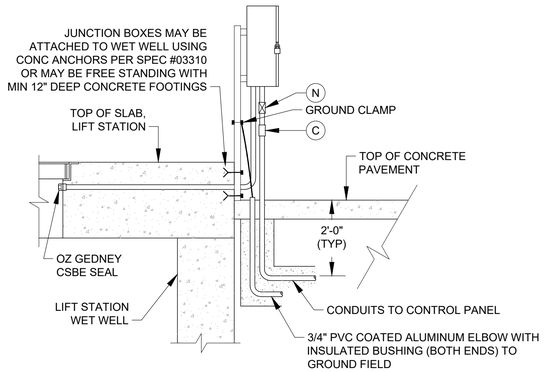


LEVEL TRANSMITTER
JUNCTION BOX

DETAIL 7
NTS
(SEE NOTE 7)

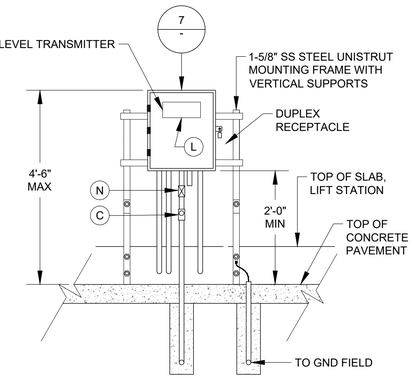
NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO JUNCTION BOXES USING 316 STAINLESS STEEL HARDWARE.
2. MAINTAIN MINIMUM SEPARATION REQUIRED UNDER NEC ARTICLE 504, BETWEEN INTRINSICALLY SAFE CONTROL WIRING AND NON INTRINSICALLY SAFE MOTOR FEEDER WIRING.
3. UNLESS OTHERWISE NOTED, ALL EXTERIOR EXPOSED CONDUITS SHALL BE PVC COATED ALUMINUM.
4. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS WASHERS, ETC SHALL BE TYPE 316 STAINLESS STEEL.
5. ALL UNDERGROUND CONDUITS TO BE ENCASED IN REINFORCED CONCRETE DUCTBANK.
6. PROVIDE ANTI-CORROSIVE SPRAY ON ANY BARE METAL PARTS OR EXPOSED WIRE.
7. SEE WIRING SCHEMATICS FOR TERMINALS AND WIRE NUMBERS.
8. ANY CONDUIT REQUIRING A CSBE SEAL, SHALL BE A MINIMUM SIZE OF 2 1/2" PER CABLE.
9. DETAIL SHOWN MAY BE MODIFIED PER SITE SITUATION.
10. COORDINATE WITH WASTE WATER OPERATIONS ELECTRICAL ORGANIZATION FOR THE OPENING OF JUNCTION BOXES TO THE SIDE OF WET WELL IF REQUIRED DURING CONSTRUCTION.
11. THE ENCLOSURES WITH ELECTRICAL CIRCUITS SHALL BE A MINIMUM OF 5 FEET FROM ANY CLASSIFIED AREA, OTHERWISE EXPLOSION PROOF TYPE ENCLOSURES SHALL BE USED.



TYP SIDE VIEW FOR DETAIL 1, 2, & 6

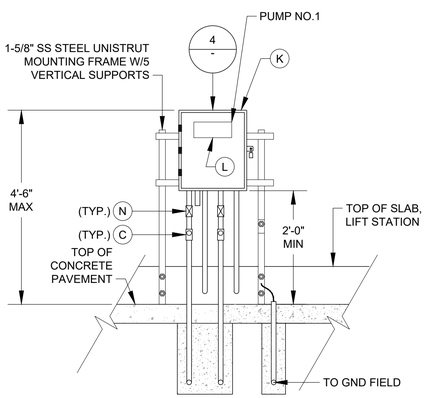
(SEE NOTE 10)



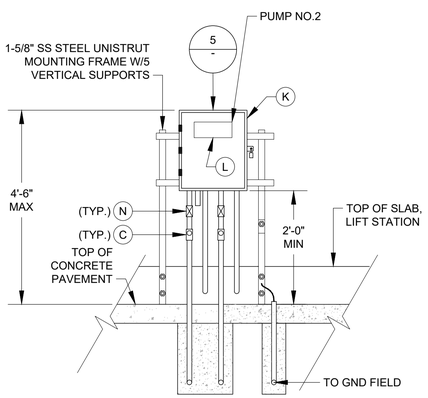
DETAIL 8
NTS
(SEE NOTE 9 & 12)

JUNCTION BOX EQUIPMENT SCHEDULE

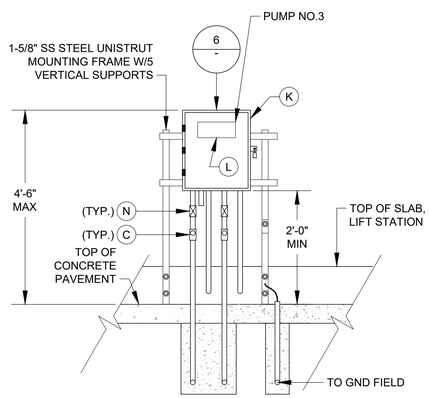
- A - OZ GEDNEY CSBE SEAL
- B - WATERTIGHT CONDUIT HUB WITH INSULATED BUSHING
- C - CLASS I, DIV 1, EXPLOSION PROOF SEAL INSTALLED PER NEC DIV 501
- D - POWER TERMINAL BLOCK W/SCREW DOWN BOX LUGS
- E - CONTROL TERM BLOCK W/SCREW DOWN BOX LUGS
- F - MULTI-CONDUCTOR CABLE, REMOVE OUTER JACKET AS SHOWN
- G - WIRING AS SCHEDULED
- H - NOT USED.
- I - NOT USED.
- J - NOT USED
- K - NEMA 6P STAINLESS STEEL JUNCTION BOX WITH GASKETED FRONT COVER, SINGLE QUARTER TURN, OIL-TIGHT LATCH AND PADLOCKING PROVISIONS, MINIMUM SIZE: 12"W X 16"H X 6"D
- L - NAMEPLATE, SEE SPECIFICATIONES (SEE NAMEPLATE SCHEDULE)
- M - NOT USED.
- N - EXPANSION FITTING
- O - DRAIN VENT



DETAIL 1
NTS
(SEE NOTE 9 & 12)



DETAIL 2
NTS
(SEE NOTE 9 & 12)



DETAIL 3
NTS
(SEE NOTE 9 & 12)

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
JUNCTION BOX DETAIL

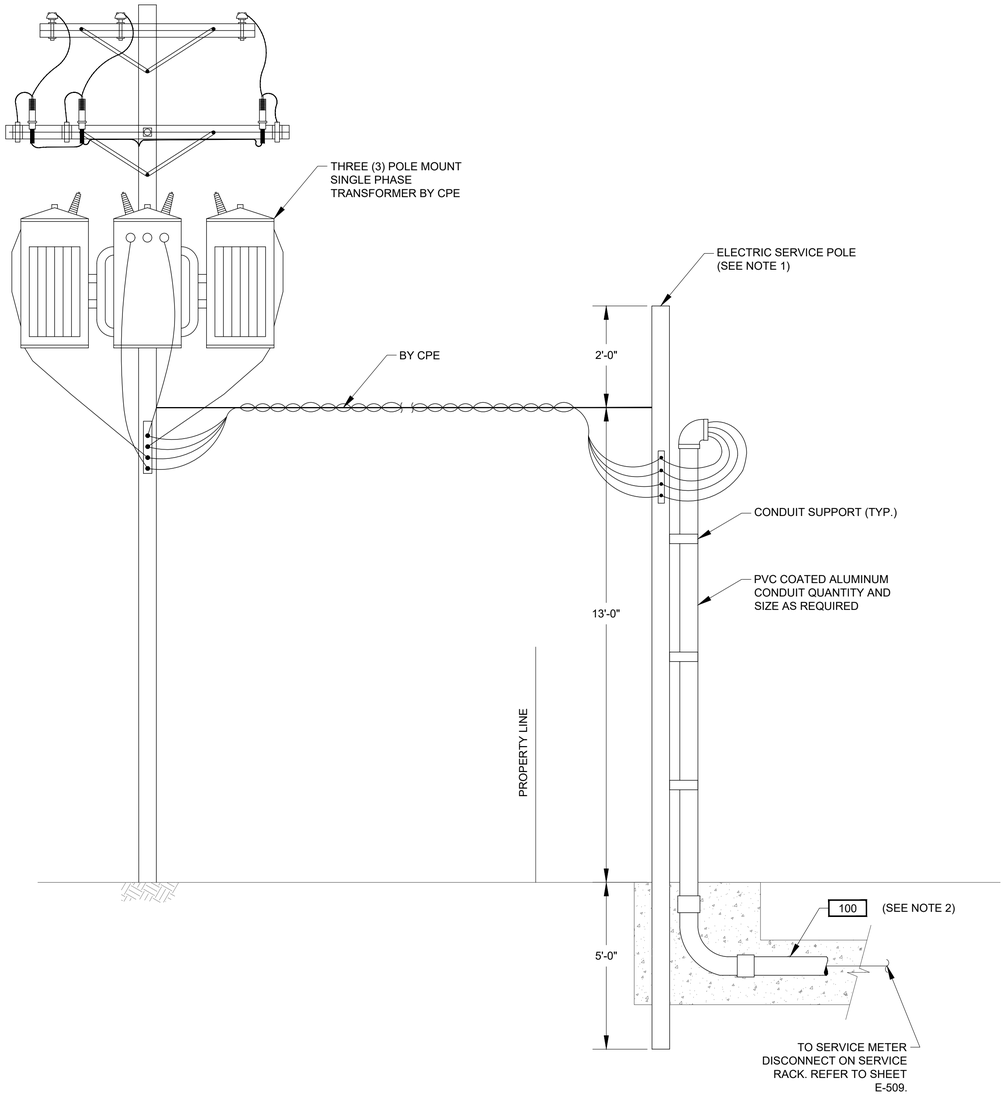
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-504
HORIZ: NONE
VERT: NONE
SHEET NO. 151 OF 225
DRAWING SCALE
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ELECTRICAL SERVICE ENTRANCE

DETAIL 1
NTS. -

NOTES:

1. WOODEN POLE 20' LONG. TOP DIAMETER 6", BOTTOM DIAMETER 8" PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
2. ELECTRICAL SERVICE FEEDER PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. COORDINATE WITH CPE FOR THE REQUIREMENTS OF THE INSTALLATION.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
SERVICE POLE DETAIL

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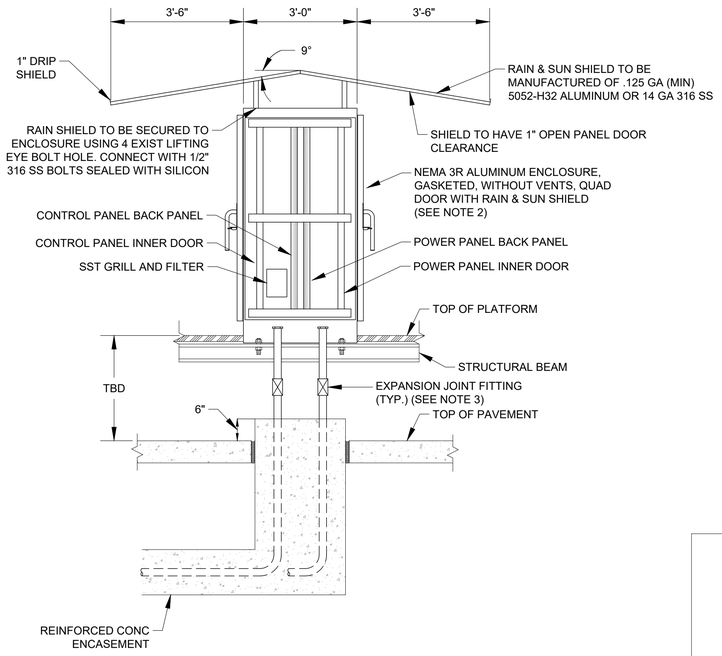
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

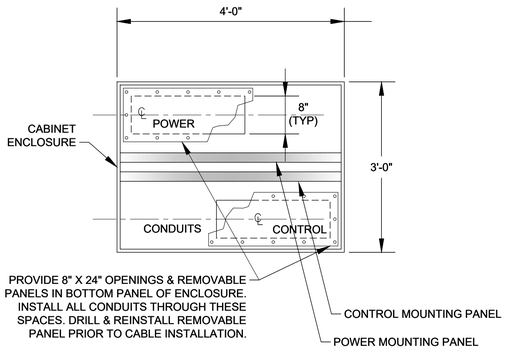
DRAWING NO. E-505
HORIZ: NONE
VERT: NONE
SHEET NO. 152 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

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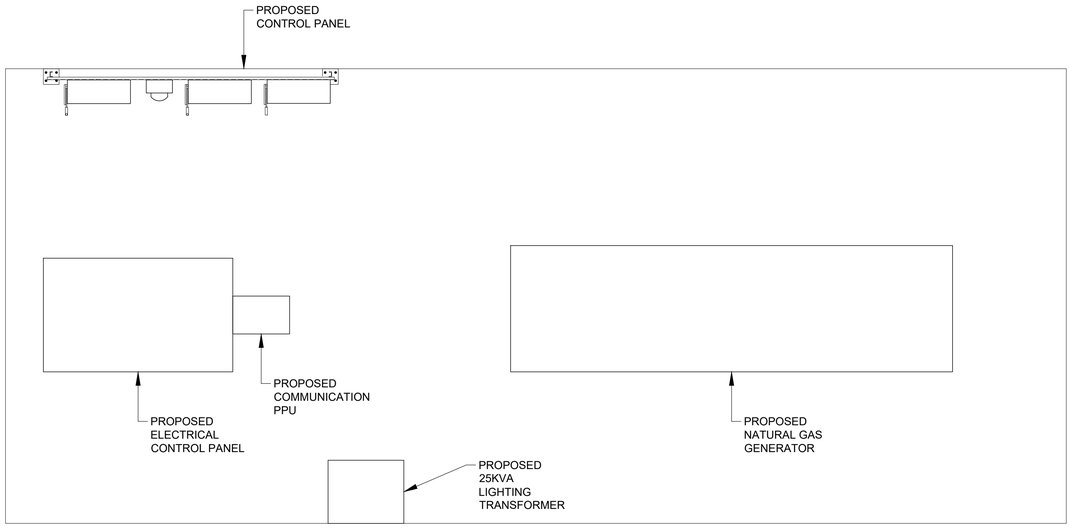
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CONTROL CABINET ENCLOSURE WITH PLATFORM



SECTION 2 - (SEE NOTE 7)
NTS



STATELY OAKS ELECTRICAL
PROPOSED ELECTRICAL PAD

PLAN (SEE NOTE 6)
1/2"= 1'-0"

NOTES:

1. SEE SHEET XX FOR EQUIPMENT SCHEDULE.
2. REFER TO SPEC 13325-8 FOR PANEL DIMENSIONS.
3. EXPANSION JOINT FITTINGS AS REQUIRED.
4. REFER TO SERVICE RACK FOR DETAIL.
5. REFER TO STRUCTURAL DRAWINGS .
6. CONDUIT TO BE MOUNTED BELOW PLATFORM GRATING.
7. ALL CONDUITS ENTERING THE CABINET SHALL BE BOTTOM ENTRY.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
CONTROL PANEL DETAIL

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HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-506	HORIZ: AS SHOWN VERT: AS SHOWN
SHEET NO. 153 OF 225	DRAWING SCALE

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	DESCRIPTION	SERVICE		ROUTING			CONDUIT & WIRE SIZE
		VOLTAGE	AMPS OR HP	FROM	TO	VIA	
A	MAIN BONDING JUMPER	--	--	MAIN FUSED DISCONNECT NEUTRAL	MAIN FUSED DISCONNECT GROUND	--	1/0 CU GND.
B	EQUIPMENT BONDING JUMPER	--	--	MCC/POWER PANEL ENCLOSURE	POWER/CONTROL PANEL & EQUIPMENT	--	1/0 CU GND.
C	GROUNDED ELECTRODE CONDUCTOR	--	--	GROUNDING ELECTRODE	MAIN SERVICE FUSED DISCONNECT GROUNDING	--	1/0 CU GND.
100	SERVICE ENTRANCE	480V	400A	UTILITY POWER SERVICE	METER DISCONNECT		3 #500 MCM, #1/0 GND., 3-1/2"C.
100A	SERVICE POWER	480V	400A	SERVICE DISCONNECT	MANUAL TRANSFER SWTICH	--	3 #500 MCM, #1/0 GND., 3-1/2"C.
100B	MCC SERVICE POWER	480V	400A	MANUAL TRANSFER SWITCH	MAIN BREAKER IN MCC	--	3 #500 MCM, #1/0 GND., 3-1/2"C.
100C	NORMAL/EMERGENCY POWER STATUS	24VDC	--	MANUAL TRANSFER SWITCH	CONTROL PANEL	CAPPED CONDUITS	4 #14 AWG., 1"C.
100D	EMERGENCY POWER	480V	400A	GENERATOR DISCONNECT	MANUAL TRANSFER SWITCH	--	3 #500 MCM, #1/0 GND., 3-1/2"C.
101	GROUND ELECTRODE CONDUCTOR	--	--	MCC ENCLOSURE	GROUND FIELD	--	#2/0 GND.
102	GROUND ELECTRODE CONDUCTOR	--	--	BUILDING STEEL	GROUND FIELD	--	#2/0 GND.
103	BUILDING GROUNDING	--	--	BUILDING REBAR	LIGHTNING GROUND ROD	--	#2/0 GND.
104	GROUND ELECTRODE CONDUCTOR	--	--	CONTROL PANEL	GROUND FIELD	--	#2/0 GND.
105	COMMUNICATION	--	--	COMMUNICATION POLE	CONTROL PANEL	--	1-1/2"C. CAT 5E
105A	COMMUNICATION POLE LIGHT	120V	--	COMMUNICATION POLE	LIGHTING PANEL	--	2#12, #12G, 1"C.
200	PUMP NO. 1 POWER	480V	60 HP	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
201	PUMP NO. 1 CONTROLS	120V	--	PUMP NO. 1	PUMP NO. 1 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
202	PUMP NO. 1 POWER	480V	60 HP	PUMP NO. 1 JUNCTION BOX	PUMP STARTER	--	3#3, #6 GND., 2"C.
203	COMBINED PUMP CONTROLS	120V	--	PUMP NO. 1 JUNCTION BOX	PUMP STARTER	COMBINE PUMP 1 & 2 CONTROLS	COMBINE 200 & 300 TAG WIRING, 8#14, 1"C.
205	PUMP NO. 1 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	12#14, 3/4"C.
206	PUMP NO. 1 CAPACITOR	480V	TBD	PUMP NO. 1 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	3 #8 AWG., #10 GND., 3/4"C.
300	PUMP NO. 2 POWER	480V	60 HP	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
301	PUMP NO. 2 CONTROLS	120V	--	PUMP NO. 2	PUMP NO. 2 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
302	PUMP NO. 2 POWER	480V	60 HP	PUMP NO. 2 JUNCTION BOX	PUMP STARTER	--	3#1, #6 GND., 2"C.
305	PUMP NO. 2 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	12#14, 3/4"C.
306	PUMP NO. 2 CAPACITOR	480V	TBD	PUMP NO. 2 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	3 #8 AWG., #10 GND., 3/4"C.
400	PUMP NO. 3 POWER	480V	60 HP	PUMP NO. 3	PUMP NO. 3 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
401	PUMP NO. 3 CONTROLS	120V	--	PUMP NO. 3	PUMP NO. 3 JUNCTION BOX	--	MANUFACTURER CABLE IN 2-1/2"C.
402	PUMP NO. 3 POWER	480V	60 HP	PUMP NO. 3 JUNCTION BOX	PUMP STARTER	--	3#3, #6 GND., 2"C.
403	COMBINED PUMP CONTROLS	120V	-	PUMP NO. 3 JUNCTION BOX	CONTROL PANEL	--	4#14, 1"C.
405	PUMP NO. 3 CONTROLS	120V	--	STARTER IN MOTOR CONTROL CENTER	CONTROL PANEL	--	12#14, 1"C.
406	PUMP NO. 3 CAPACITOR	480V	TBD	PUMP NO. 3 MOTOR STARTER	POWER FACTOR CORRECTION CAPACITOR	--	3 #8 AWG., #10 GND., 3/4"C.
600	LIGHTING PANEL FEEDER	480V	70A	MOTOR CONTROL CENTER	LIGHTING TRANSFORMER	--	2#4, #4 GND., 1-1/2"C.
601	LIGHTING PANEL GROUND	--	--	LIGHTING PANEL	GROUND FIELD	--	#8 GND., 1"C.
602	LIGHTING PANEL FEEDER	120/240V	--	LIGHTING TRANSFORMER	LIGHTING PANEL	--	3#1, #6 GND., 1-1/2" C.
900	INTRUSION ALARM	24VDC	--	MOTION SWITCH	CONTROL PANEL	--	2#14, 3/4" C.
1000	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2"C
1001	LEVEL TRANSMITTER	24VDC	--	TRANSMITTER JUNCTION BOX	TRANSMITTER JUNCTION BOX	--	MANUFACTURER'S CABLE IN 2-1/2"C
1002	COMBINED LEVEL TRANSMITTERS & FLOAT SWITCH	24VDC	--	CONTROL PANEL	TRANSMITTER JUNCTION BOX	--	2-TRI, 4#14, 2" C.
1003	WELL FLOAT SWITCHES	24VDC	--	TRANSMITTER JUNCTION BOX	FLOAT SWITCH NO.1 & NO.2	--	MANUFACTURER'S CABLE IN 2-1/2"C
1100	120VAC FOR RECEPTACLE	-	--	LIGHTING PANEL	RECEPTACLE NEXT TO TRANSMITTER J-BOX	--	2#12, #12G, 1" C.
1200	120VAC FOR RECEPTACLE	-	--	LIGHTING PANEL	RECEPTACLE NEXT TO PUMP NO.2 J-BOX	--	2#12, #12G, 1" C.
1300	SITE LIGHTING	120VAC	--	LIGHTING PANEL	SITE LIGHTS	--	2#12, #12G, 1" C.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
CONDUIT SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-507

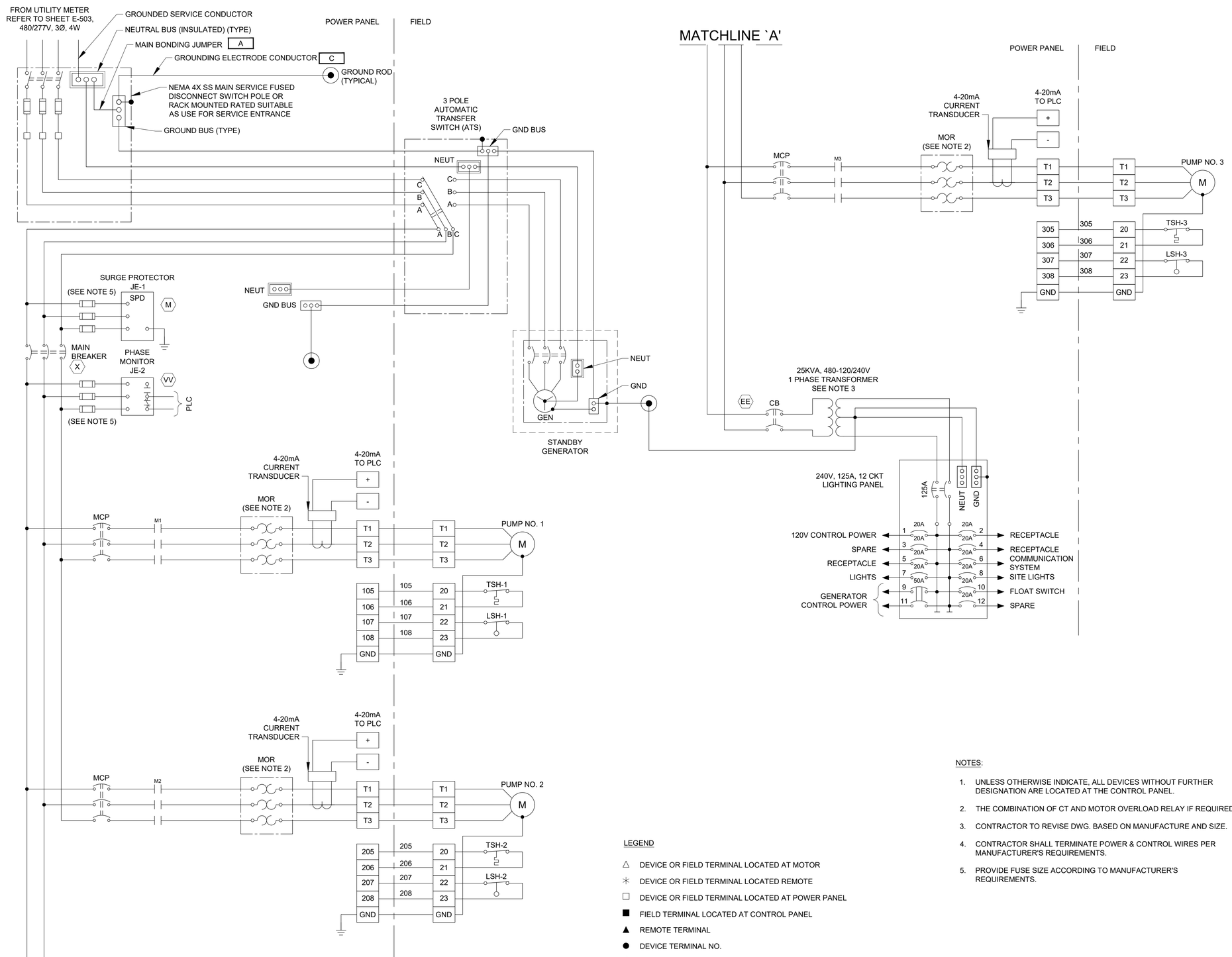
HORIZ: NONE
VERT: NONE

SHEET NO. 154 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\W8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Stately Oaks\Stately Oaks_E-07.dwg



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PC INTERFACE TERMINAL

NOTES:

1. UNLESS OTHERWISE INDICATE, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
2. THE COMBINATION OF CT AND MOTOR OVERLOAD RELAY IF REQUIRED.
3. CONTRACTOR TO REVISE DWG. BASED ON MANUFACTURE AND SIZE.
4. CONTRACTOR SHALL TERMINATE POWER & CONTROL WIRES PER MANUFACTURER'S REQUIREMENTS.
5. PROVIDE FUSE SIZE ACCORDING TO MANUFACTURER'S REQUIREMENTS.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS LIFT STATION THREE-LINE DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-508

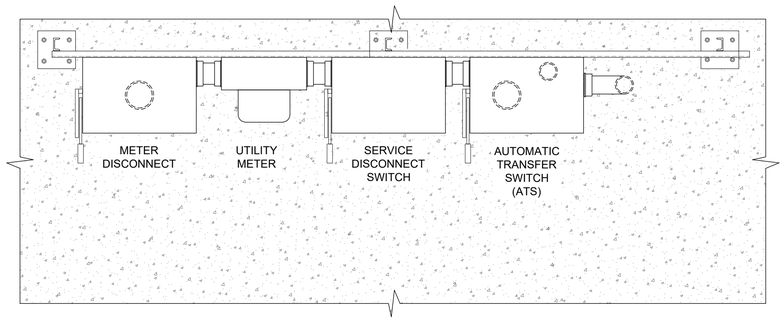
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SHEET NO. 155 OF 225

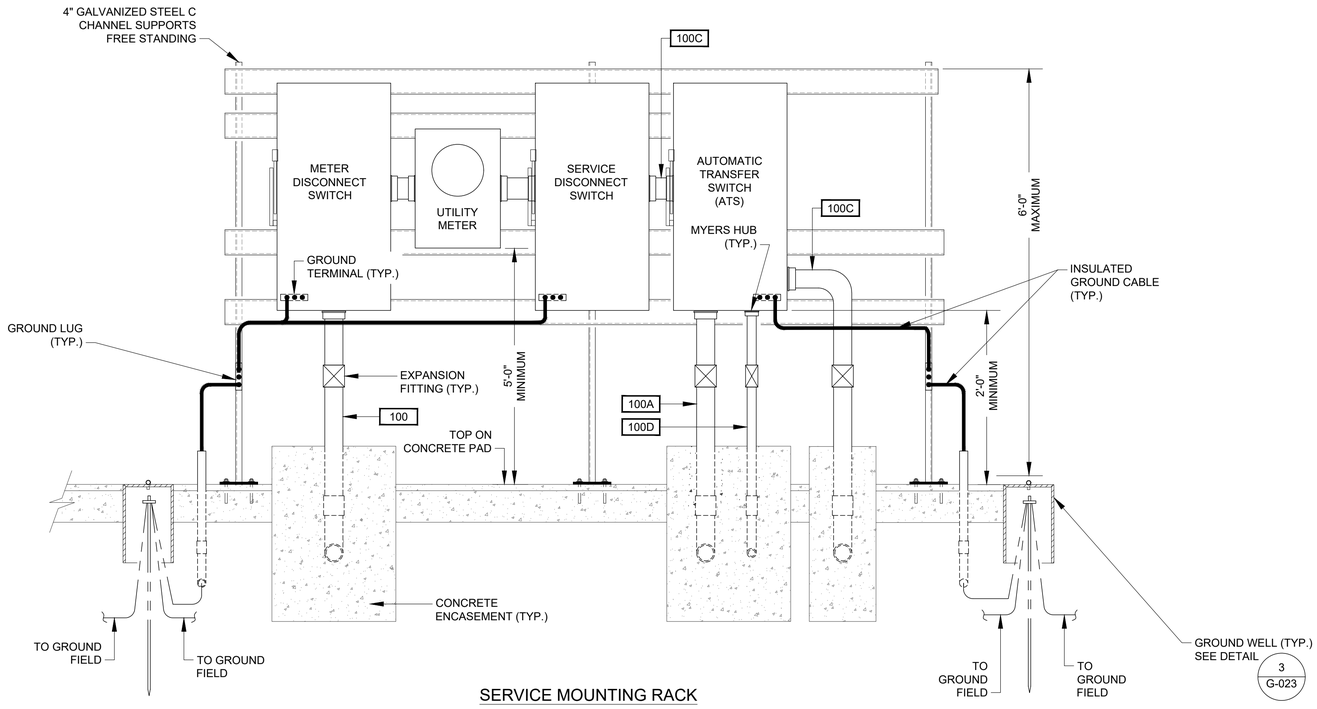
DRAWING SCALE

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PLAN



SERVICE MOUNTING RACK

DETAIL 1
NTS. -

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
SERVICE RACK DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

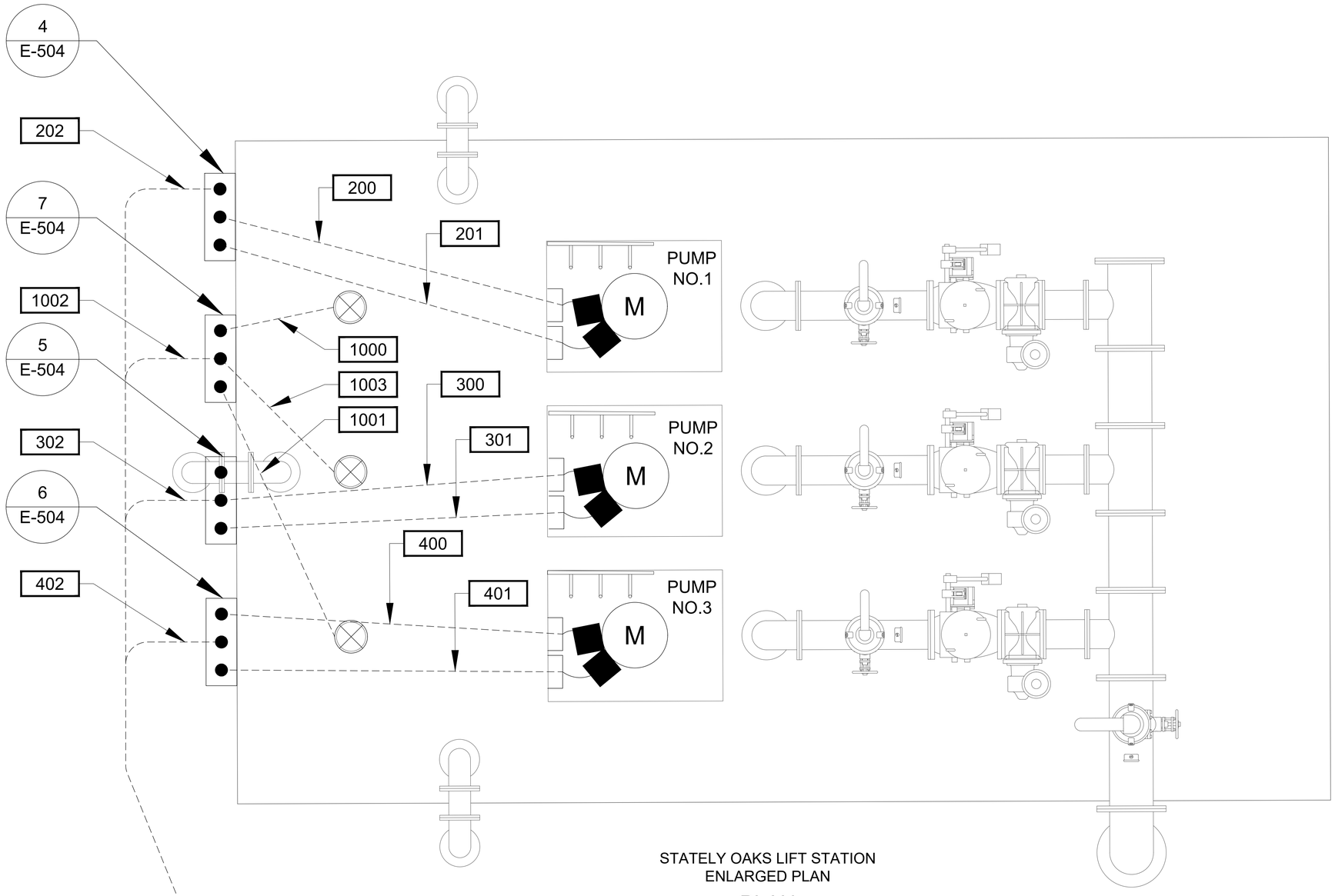
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-509	HORIZ: NONE VERT: NONE
SHEET NO. 156 OF 225	DRAWING SCALE

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STATELY OAKS LIFT STATION
ENLARGED PLAN

PLAN

3/4"=1'-0"

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
ENLARGED PLAN VIEW

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. E-510

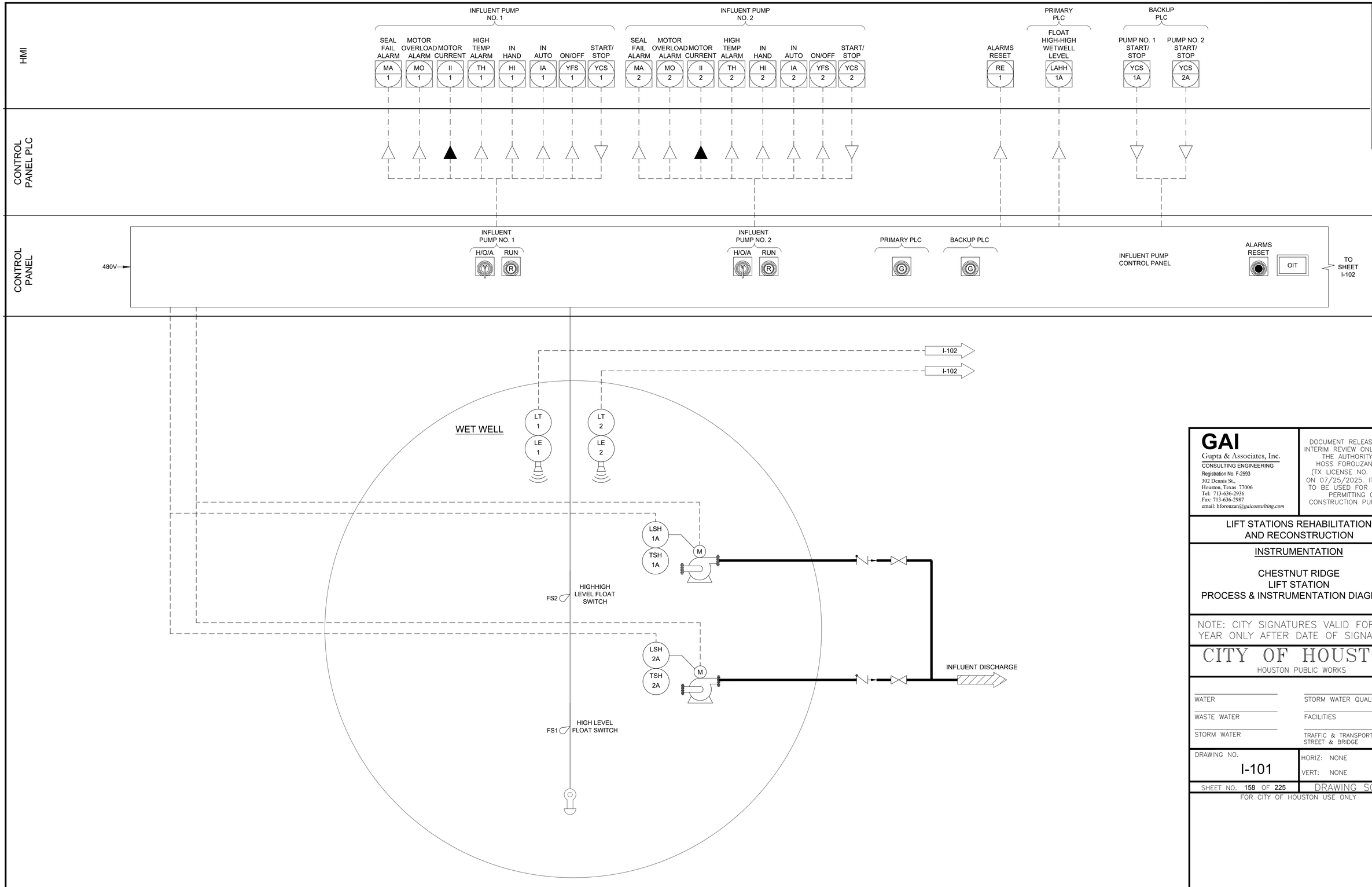
HORIZ: 3/4"=1'-0"
VERT: 3/4"=1'-0"

SHEET NO. 157 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Electrical\Working\Stately Oaks\Stately Oaks_E-10.dwg



NO.	DATE	REVISION	APP.

PEN TABLE: ----

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
PROCESS & INSTRUMENTATION DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

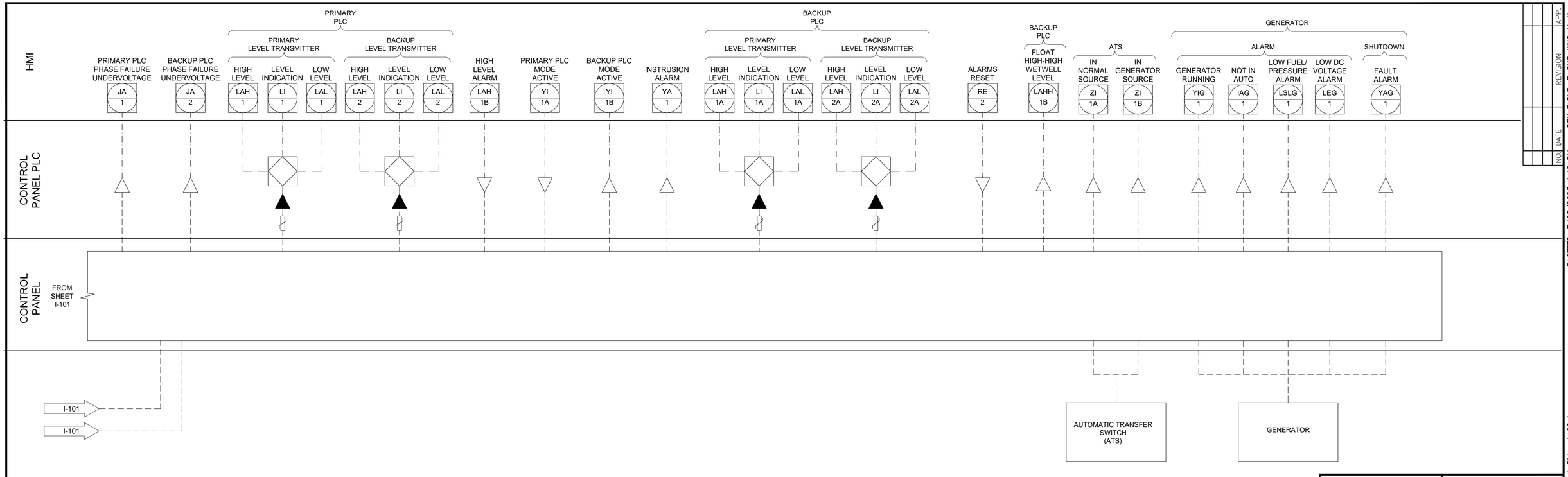
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-101	HORIZ: NONE VERT: NONE
SHEET NO. 158 OF 225	DRAWING SCALE

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-102

HORIZ: NONE
VERT: NONE

SHEET NO. 159 OF 225

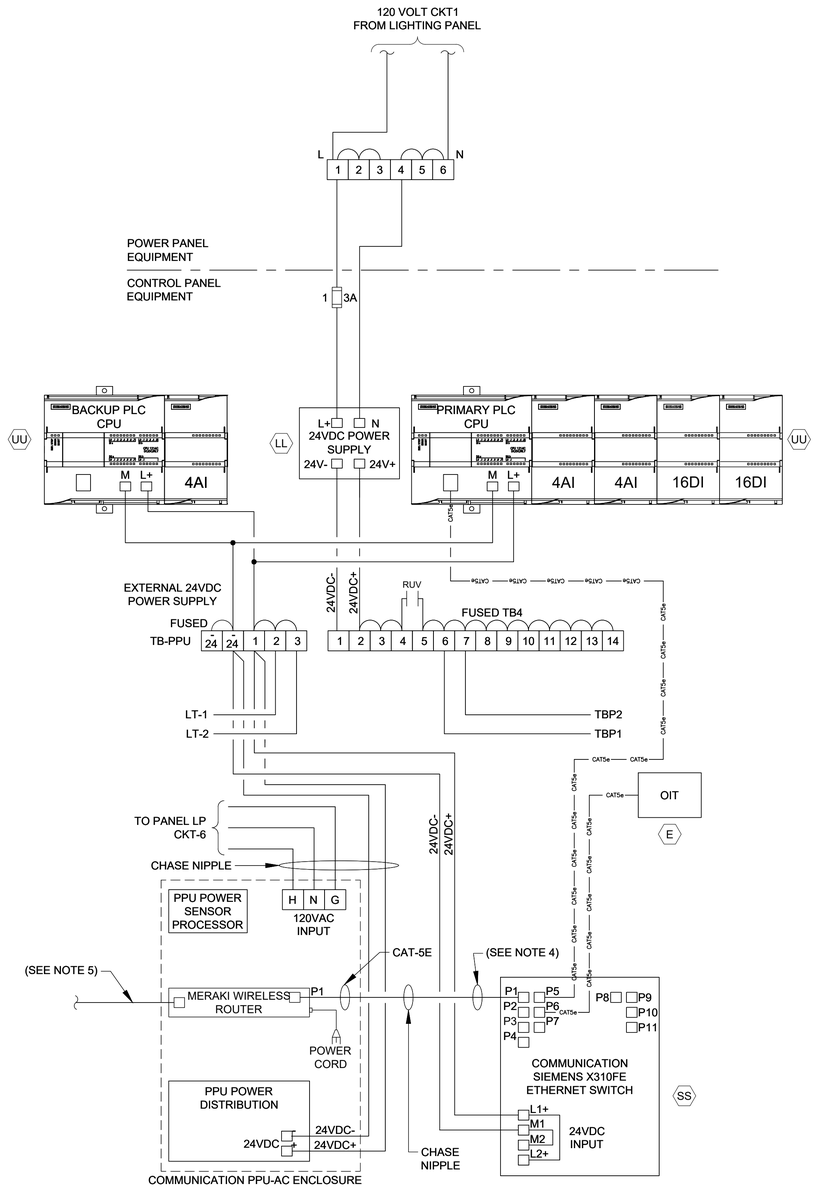
DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Chestnut Ridge\Chestnut Ridge_I-02.dwg

NOTES:

1. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED WITH ITEM TAG, SEE DEVICE RATINGS SCHEDULE.
2. REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.
3. THE PLC POWER SUPPLY SHALL FEED THE 24VDC I/O.
4. ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. POE CABLE TO RADIO.
6. COMMUNICATION PPU-AC & SCADA SHALL BE PROVIDED BY CONTRACTOR INCLUDING TO RUN CONDUITS & WIRES.
7. COORDINATE WITH VENDOR TO PROVIDE PROPER VENTILATION WHERE APPLICABLE.

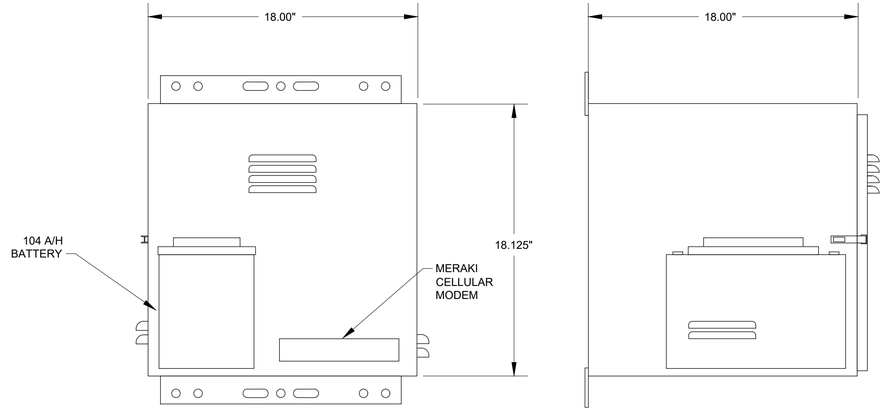


CONTROL POWER & COMMUNICATIONS WIRING

DIAGRAM

NTS

(SEE NOTE 2 & 6)



PPU-AC ENCLOSURE FRONT VIEW

PPU-AC ENCLOSURE SIDE VIEW

PPU-AC CONTROL ENCLOSURE

ELEVATION

NTS

(SEE NOTE 7)

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
COMMUNICATIONS DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-103	HORIZ: NONE VERT: NONE
SHEET NO. 160 OF 225	DRAWING SCALE

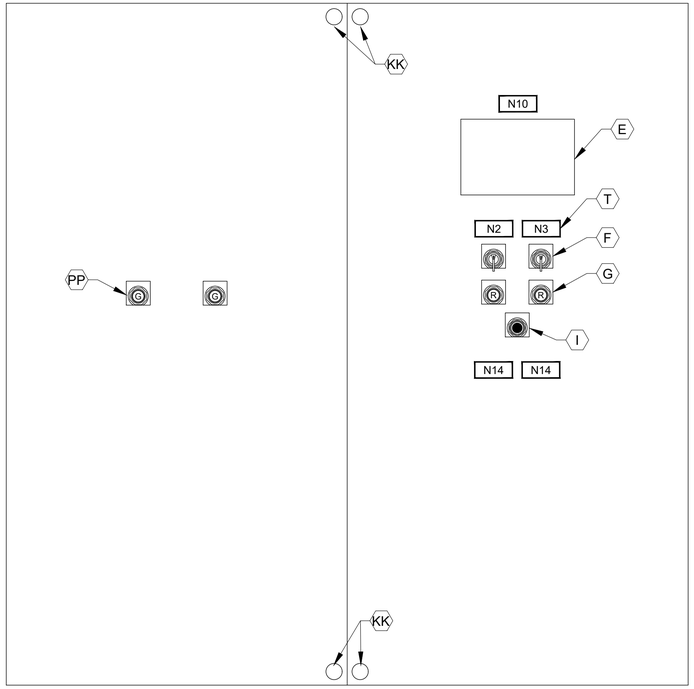
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EQUIPMENT AND DEVICE SCHEDULE

ITEM	QUANTITY	DESCRIPTION
A	1	PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100A, 12 CKTS
B	2	FULL VOLTAGE, NON-REVERSING, SINGLE SPEED, AUTOMATIC MOTOR STARTER W/120 VOLT CONTROL COIL, NEMA SIZE AS SCHEDULED.
C	2	TIME DELAY RELAY WITH THREE FORM C CONTACTS, 120VAC COIL AND 11 PIN SOCKET BASE.
D	1	SINGLE CHANNEL INTRINSICALLY SAFE RELAY
E	1	PROGRAMMING SCREEN (OIT)
F	2	HAND-OFF-AUTO SWITCH, 3 POSITION, HEAVY-DUTY, OILTIGHT WITH 2 SETS OF CONTACT BLOCKS (PUMP CONTROL)
G	2	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, RED, 24 VDC, LED, WITH "RUN" LEGEND
H	1	PERPETUAL POWER UNIT (PPU)
I	1	PUMP ALARM RESET PUSHBUTTON
J	2	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
K	3	DUPLEX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDED
L	2	24" LED STRIP LIGHT 120V SUITABLE FOR ZERO DEGREE OPERATION.
M	1	SURGE PROTECTOR - INCOMING POWER
N	*	NOT USED.
P	2	CURRENT TRANSFORMER, RATIO AS SCHEDULED W/4-20mA OUTPUT.
Q	12	TERMINAL BLOCKS, SIZED FOR MOTOR POWER REQUIREMENTS
R	*	RELAY WITH THREE FORM C CONTACTS, AND 11 PIN SOCKET BASE
S	*	NOT USED.
T	*	NAMEPLATES, SEE SPECIFICATIONS (SEE NAMEPLATE SCHEDULE)
U	2	SOLID STATE MOTOR OVERLOAD RELAY
V	6	FUSE HOLDER & FUSES - PHASE FAILURE
W	1	NEMA 3R GASKETED ALUMINUM ENCLOSURE WITHOUT VENTS 72"H x 48"w x 36"D
X	1	DOOR MOUNTED ROTARY HANDLE DISCONNECT SWITCH (SUITABLE FOR ENVIRONMENT)
Y	1	THERMAL-MAGNETIC MOLDED CASE MAIN CIRCUIT BREAKER, SIZE AS SCHEDULED
Z	2	ADJUSTABLE INSTANTENOUS TRIP MOTOR CIRCUIT PROTECTOR, SIZE AS SCHEDULED
AA	*	TERMINAL BLOCKS
BB	2	EXTERNAL OVERLOAD RESET PUSHBUTTON MECHANISM
CC	2	ANALOG I/O SURGE SUPPRESSOR
DD	1	WIRE DUCT 2" WIDE x 2" DEEP MINIMUM
EE	1	THERMAL-MAGNETIC MODLED CASE CIRCUIT BREAKER FOR LIGHTING TRANSFORMER, SIZE AS SCHEDULED
FF	1	GROUND BUS
GG	1	25 KVA, 480 - 240/120V,1ϕ, 3W DRY TYPE NEMA 3R ENCLOSURE TRANSFORMER (PAD MOUNTED)
HH	*	NOT USED.
II	1	120VAC - 24VAC POWER SUPPLY (AS REQUIRED)
JJ	11	CARTRIDGE FUSES & FUSE HOLDER
KK	8	QUARTER TURN CAPTIVE DOOR CLOSURE
LL	1	120VAC - 24VDC PLC POWER SUPPLY 5A
MM	2	MOTION SWITCH
NN	*	NOT USED
PP	2	INDICATING LED LIGHT, HEAVY DUTY, OILTIGHT, GREEN, 24 VDC, LED WITH " PRIMARY PLC" & "BACKUP PLC" LEGEND
QQ	*	NOT USED
RR	*	NOT USED
SS	1	COMMUNICATION ETHERNET SWITCH
TT	1	POWER SURGE PROTECTOR - CONTROL POWER
UU	2	PROGRAMMABLE LOGIC CONTROLLER WITH EXPANSION UNIT
VV	1	PHASE AND UNDER VOLTAGE MONITOR
WW	*	FUSED TERMINAL BLOCKS
XX	2	PUMP PROTECTION MODULE RATED FOR CLASS I, DIVISION I
YY	2	ANALOG SIGNAL ISOLATOR
ZZ	-	NOT USED
AB	-	NOT USED.
AC	1	POWER DISTRIBUTION BLOCK
AD	1	NEUTRAL LUG
AE	1	6" EXHAUST FAN, 120V, STAINLESS FILTERS & GRILL PACKAGE W/BUG GUARD
AF	1	T-STAT FOR EXHAUST FAN

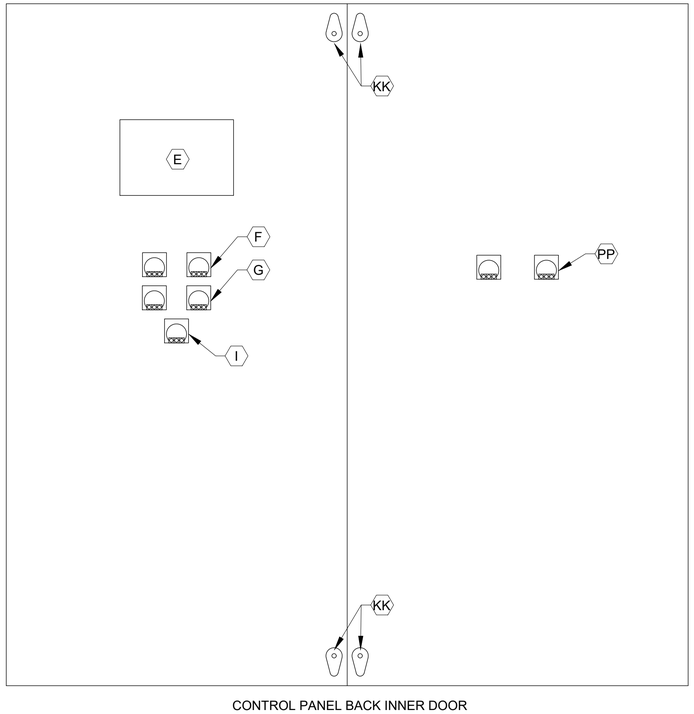
* - AS SCHEDULED



CONTROL PANEL FRONT INNER DOOR

ELEVATION

NTS



CONTROL PANEL BACK INNER DOOR

ELEVATION

NTS

NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.
2. REFER SPECIFICATIONS FOR ALL PANEL COMPONENTS.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT & SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-104

HORIZ: NONE

VERT: NONE

SHEET NO. 161 OF 225

DRAWING SCALE

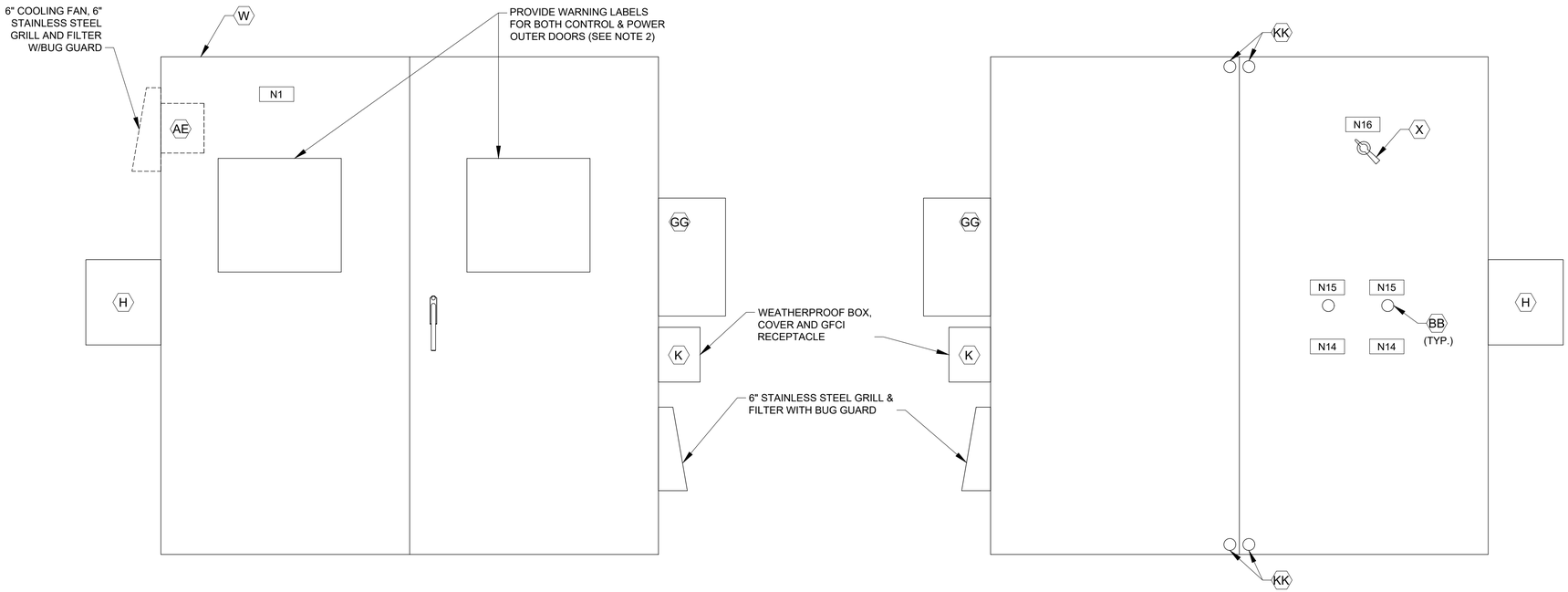
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CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

CONTROL CABINET (POWER SIDE)
INNER DOOR

ELEVATION

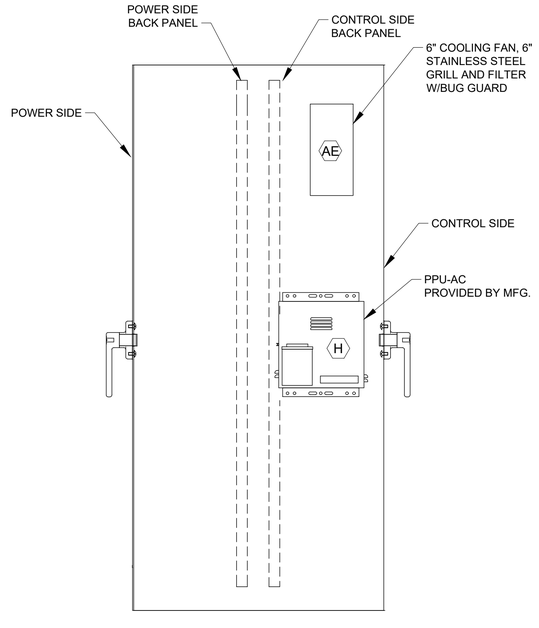
NTS
(SEE NOTE 1)

NOTES:

1. SEE SHEET I-104 FOR EQUIPMENT SCHEDULE.
2. REFER TO NEC SECTIONS 110.16 & 110.21

NAMEPLATE SCHEDULE

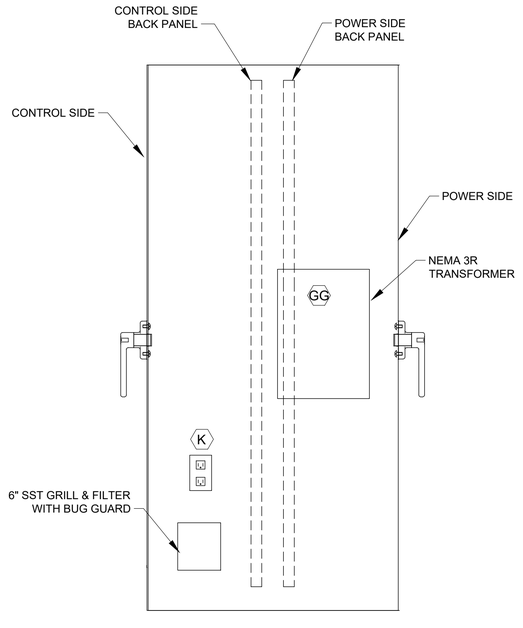
DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION
N2	PUMP NO. 1
N3	PUMP NO. 2
N4	NOT USED.
N5	NOT USED.
N6	NOT USED.
N7	NOT USED.
N8	NOT USED.
N9	NOT USED.
N10	PROGRAMMING SCREEN
N11	NOT USED.
N12	PRIMARY PLC
N13	BACKUP PLC
N14	MOTOR DATA
	HORSEPOWER (OUTPUT) ----------
	RPM AT FULL LOAD ----------
	TIME RATING ----------
	FREQUENCY ----------
	NUMBER OF PHASES ----------
	MODEL NUMBER ----------
	RATED VOLTAGE ----------
	SERVICE FACTOR ----------
	FULL LOAD AMPS ----------
	INSULATION CLAS ----------
	NEMA DESIGN LETTER ----------
	TEMPERATURE RISE ----------
	NEMA FRAME SIZE ----------
	DATE OF MANUFACTURE ----------
	THERMO PROTECTION (IF REQUIRED) --
	MOISTURE PROTECTION (IF REQUIRED)-
N15	EXTERNAL OVERLOAD RESET PUSH BUTTON MECHANISM
N16	MAIN BREAKER



CONTROL CABINET (LEFT SIDE VIEW)

ELEVATION

NTS



CONTROL CABINET (RIGHT SIDE VIEW)

ELEVATION

NTS

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

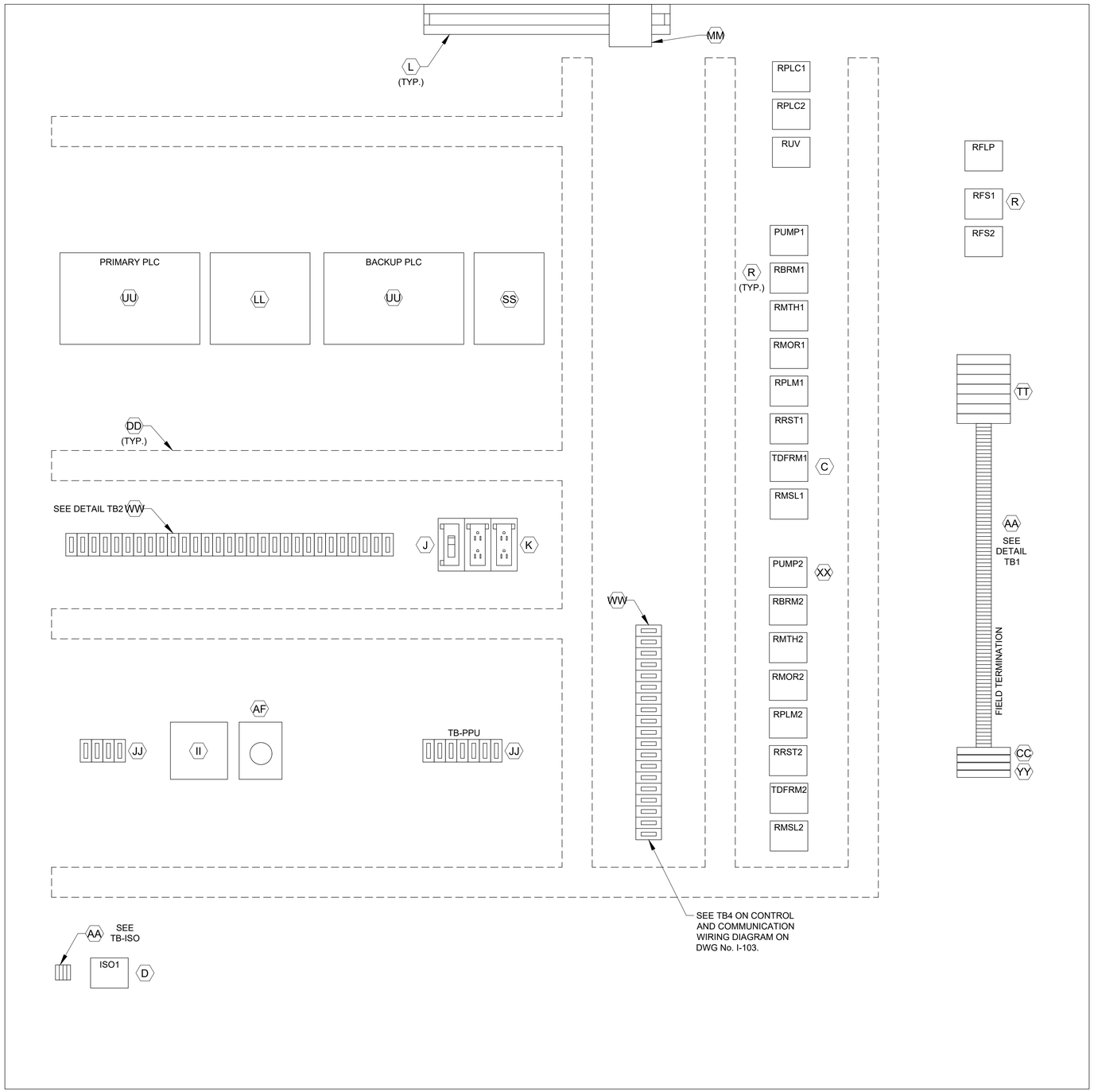
DRAWING NO. I-105	HORIZ: NONE VERT: NONE
SHEET NO. 162 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Chestnut Ridge\Chestnut Ridge_I-05.dwg



CONTROL PANEL
ELEVATION

L1A
L1N
SPARE
3
3N
49
50
51
52
53
54
1004
1
24V-
24V-
1002
2
11
1001
1001A
12
1003
1003A
1002
1004
18
3N
19
20
36
36N
41
42
43
44
SPARE
L1A
L1N
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
219

DETAIL TB1

ALL L AND N FOR EACH PUMP CONTROL TO BE FUSED

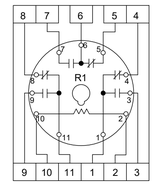
36A
37A
50
52
54
52A
54A
L+
M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
28
29
32
35B
33
42
44
SPARE
103
104
115
109
110
118
120
121
122
123
SPARE
209
210
211
218
220
222
223

DETAIL TB2

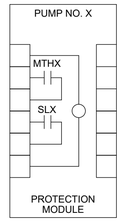
1500
1501
1503
1504

DETAIL TB-ISO

LEGEND	
TAG	DESCRIPTION
RMTH	MOTOR HIGH TEMPERATURE ALARM RELAY
RPLM	PLC PUMP RUN RELAY
RRST	PUMP RESET AUX RELAY
RPLC	PLC MODE AUX RELAY
RMOR	MOTOR OVERLOAD ALARM RELAY
RBRM	BACKUP SYSTEM RUN RELAY
RUV	UNDER VOLTAGE RELAY
ISO	INTRINSICALLY SAFE RELAY
RFS	PUMP RUN FLOAT SWITCH RELAY
TDFRM	TIMER FLOAT SWITCH RUN RELAY
RMSL	MOTOR SEAL LEAK ALARM RELAY
RFLP	FLOAT LOCKOUT PUMP RELAY



RELAY DETAIL
ITEM R



PUMP PROTECTION MODULE
DETAIL, ITEM XX

NOTE: REPLACE "X" WITH APPROPRIATE PUMP NO.

NOTES:

1. SEE SHEET I-104 FOR EQUIPMENT SCHEDULE.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

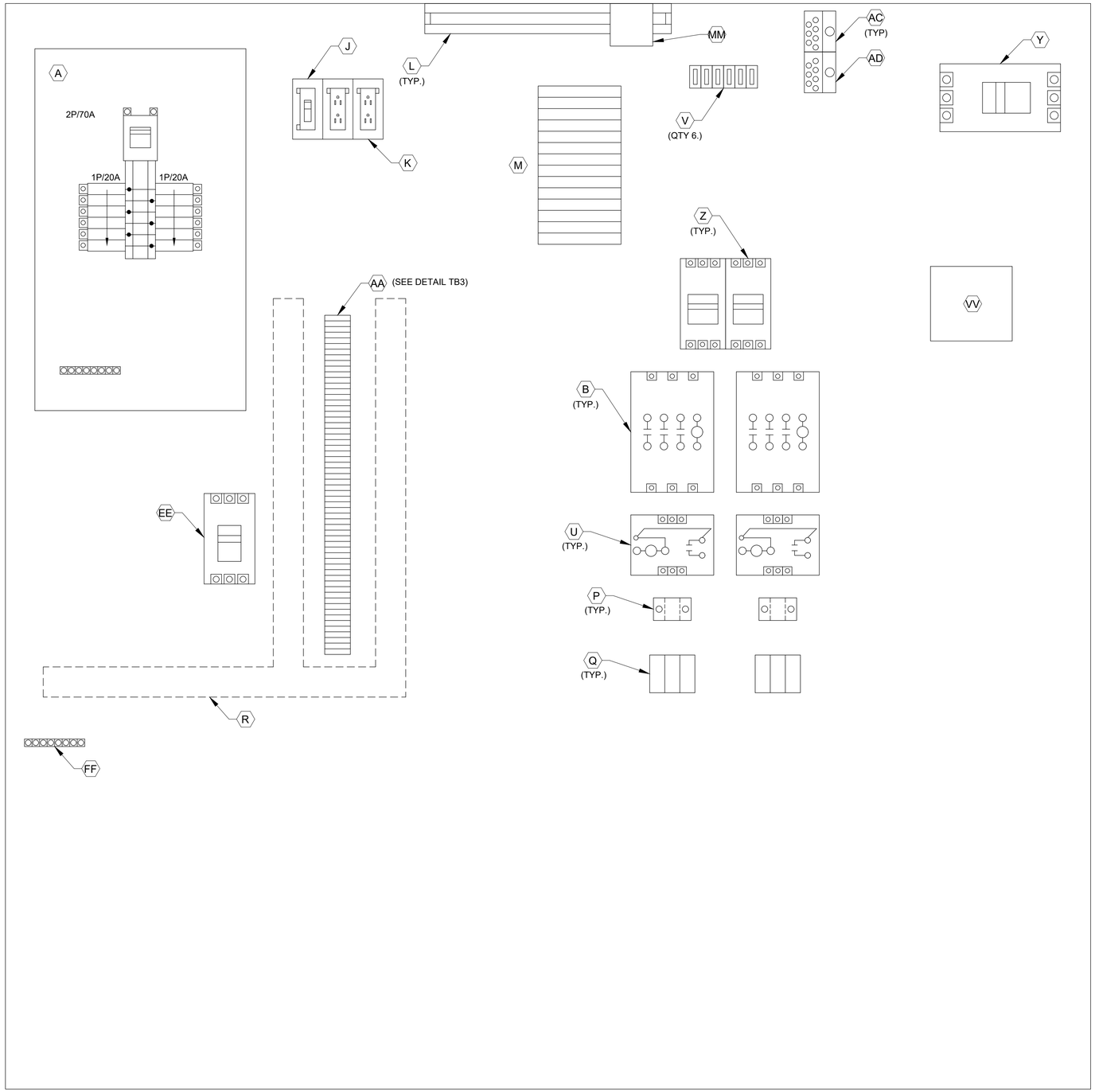
WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-106
HORIZ: NONE
VERT: NONE
SHEET NO. 163 OF 225
DRAWING SCALE
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POWER PANEL
ELEVATION

3
18
L1A
L1N
SPARE
SPARE
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
219
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE

DETAIL TB3

NOTES:

1. SEE SHEET I-104 FOR EQUIPMENT SCHEDULE.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

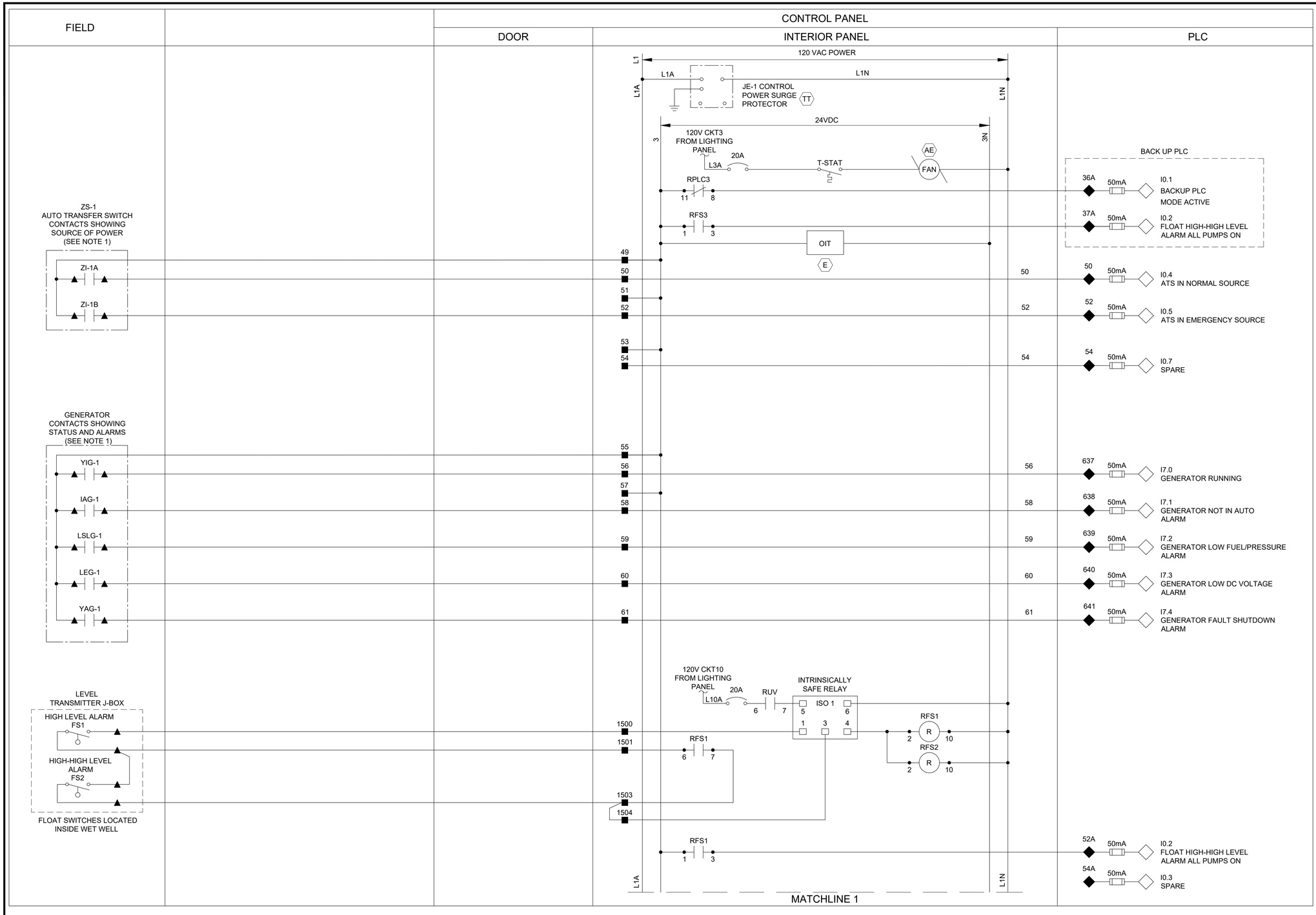
DRAWING NO. I-107	HORIZ: NONE VERT: NONE
SHEET NO. 164 OF 225	DRAWING SCALE

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NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:48 PM PEN TABLE: Z_PUB_WKS_H.ctb

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LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. PROVIDE MANUAL TRANSFER SWITCH DRY CONTACT.
2. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

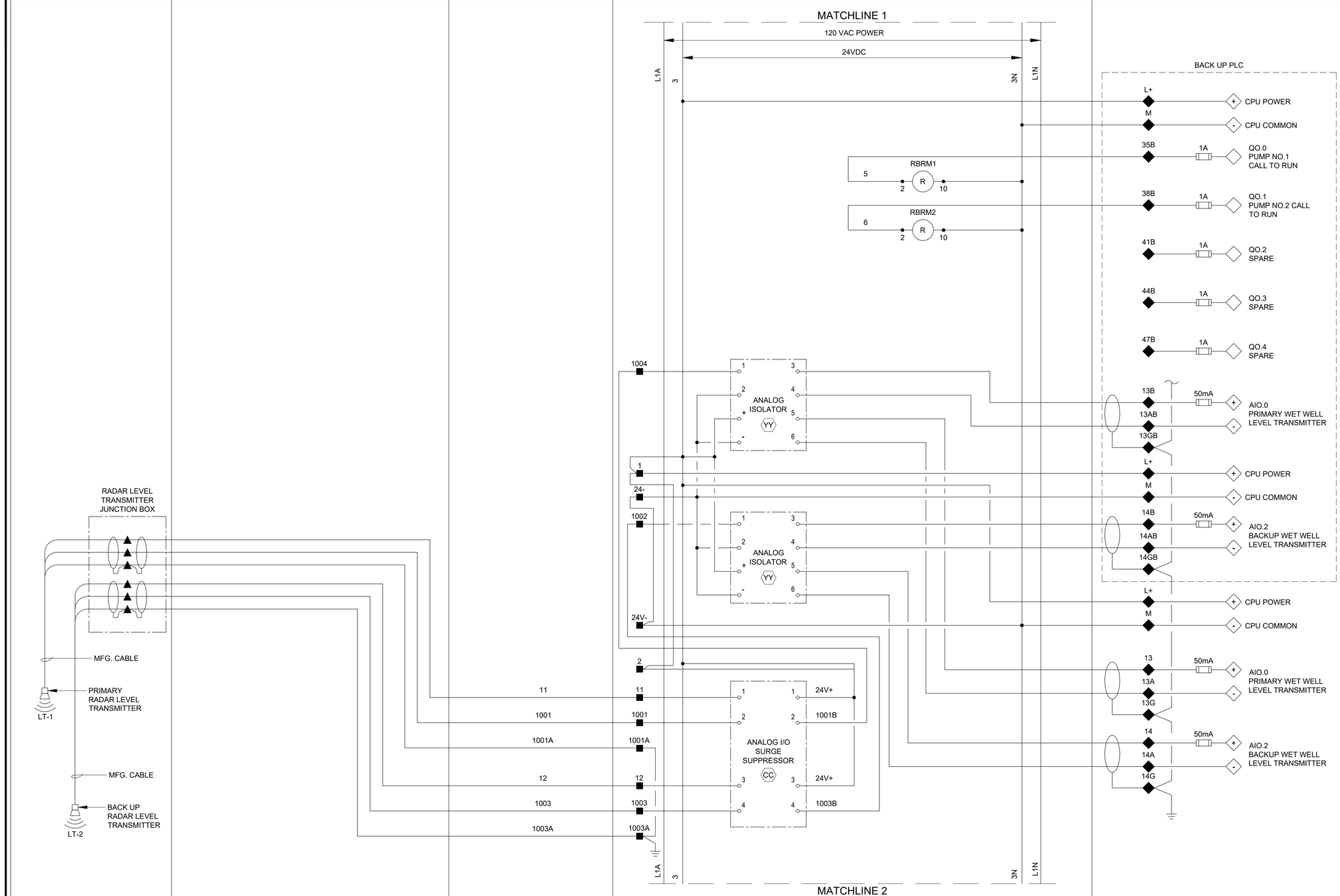
DRAWING NO. I-108	HORIZ: NONE VERT: NONE
SHEET NO. 165 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Chestnut Ridge\Chestnut Ridge_I-08.dwg

FIELD		CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

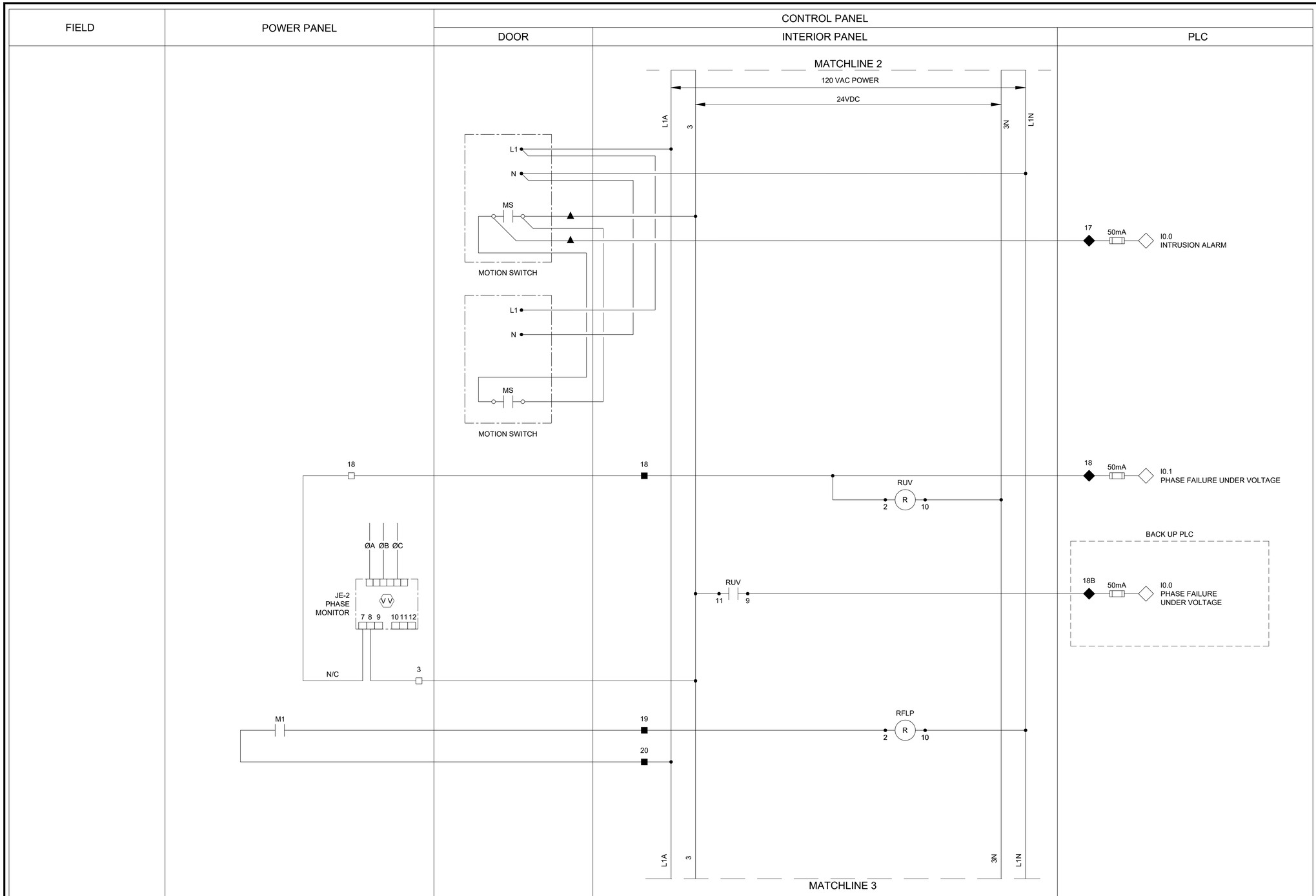
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-109	HORIZ: NONE VERT: NONE
SHEET NO. 166 OF 225	DRAWING SCALE

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LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. PROVIDE ONE LIMIT SWITCH PER EXTERIOR CONTROL PANEL AND POWER PANEL DOOR, WIRED IN PARALLEL.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-110

HORIZ: NONE
VERT: NONE

SHEET NO. 167 OF 225

DRAWING SCALE

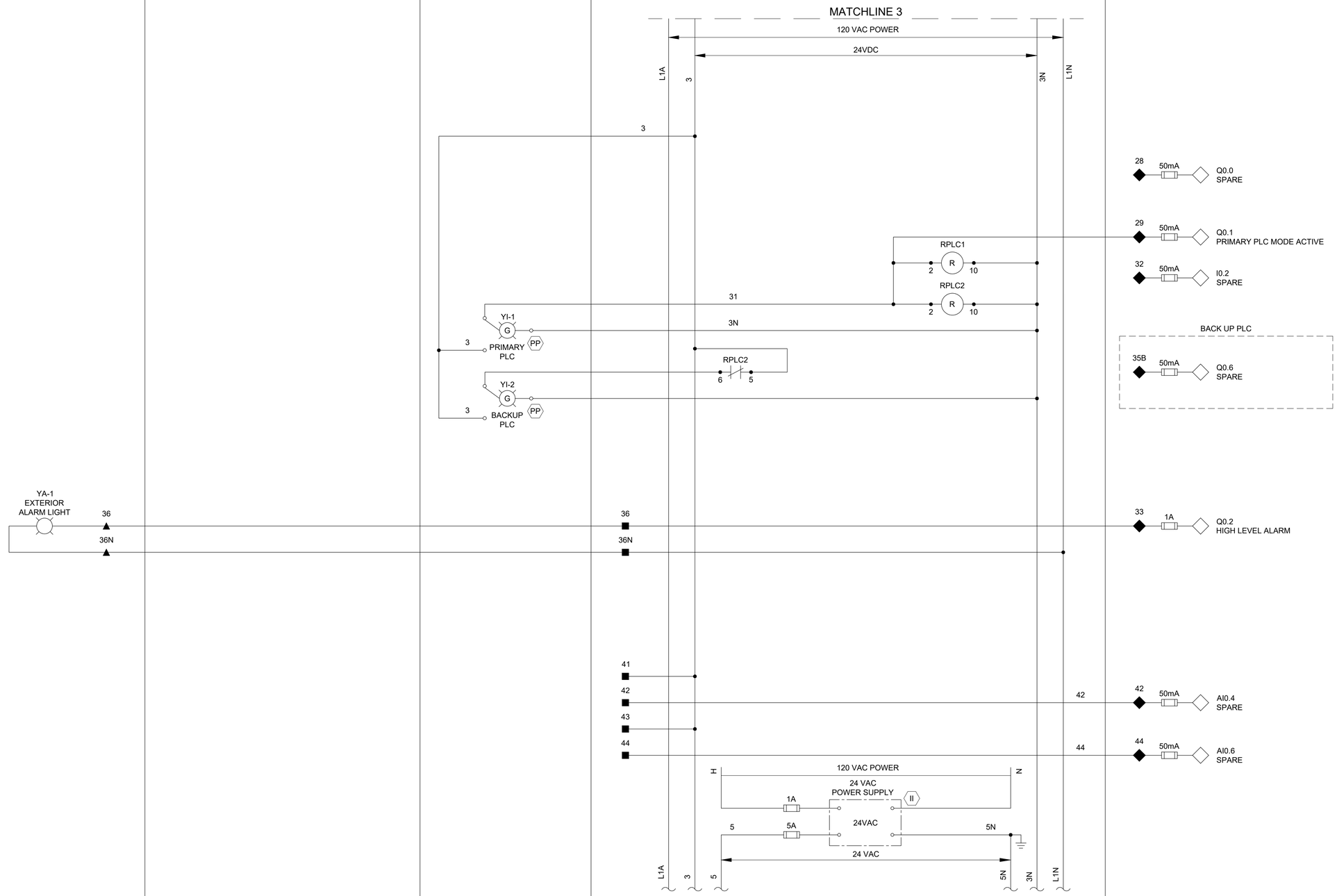
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NO.	DATE	REVISION	APP.

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FIELD	POWER PANEL	CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-IV

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

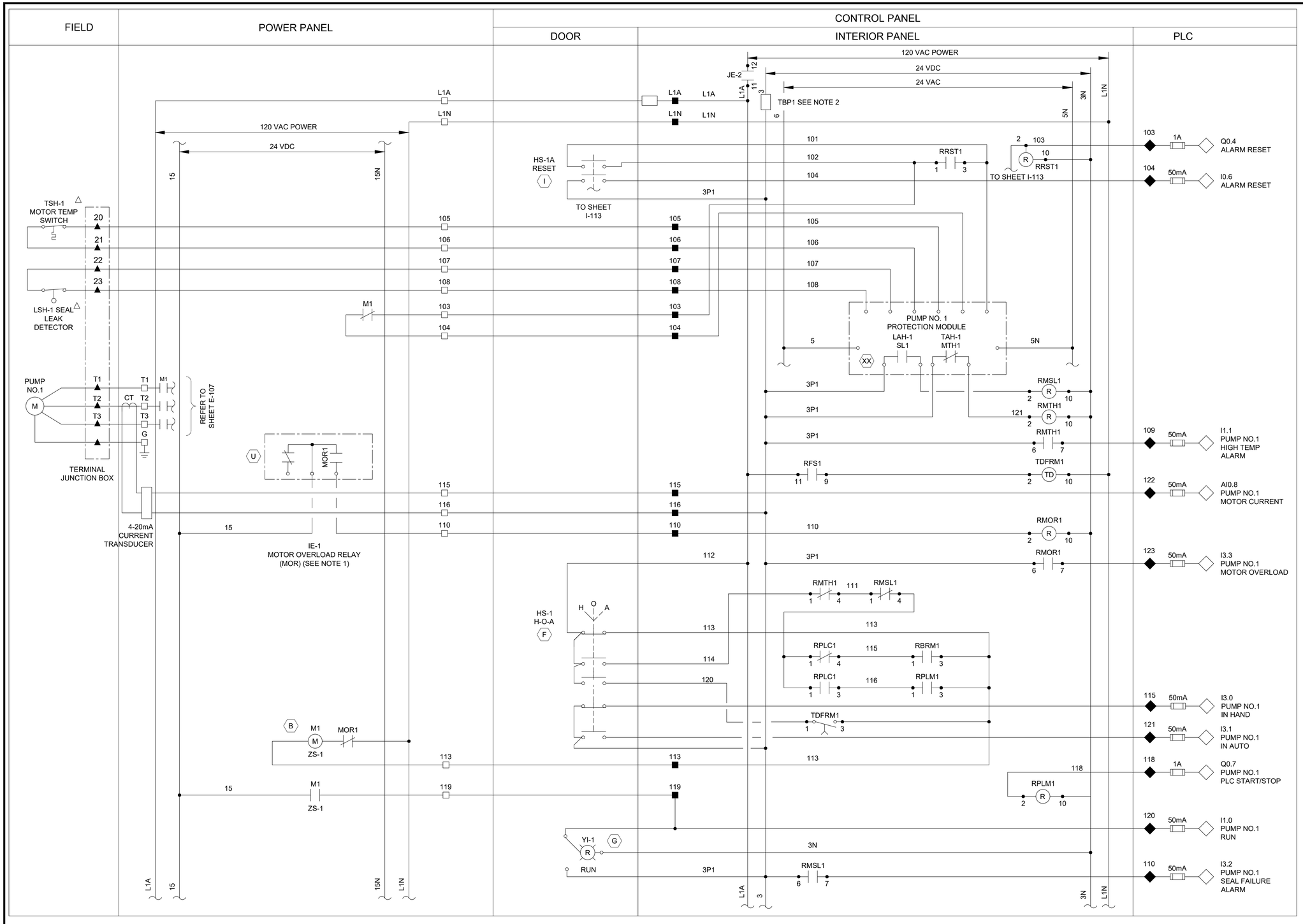
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-111	HORIZ: NONE VERT: NONE
SHEET NO. 168 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Chestnut Ridge\Chestnut Ridge_I-11.dwg



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-303.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
PUMP NO.1
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

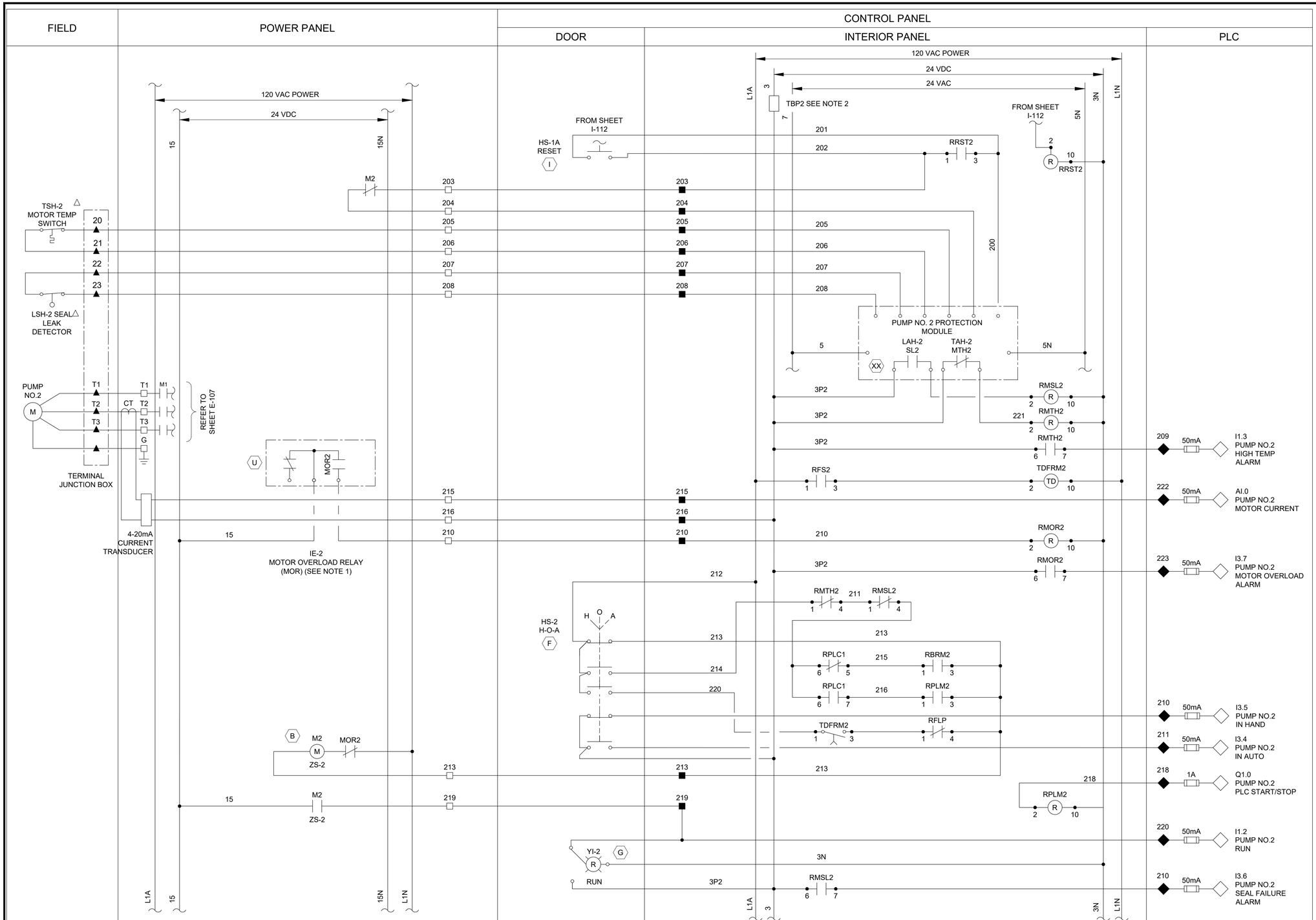
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-112	HORIZ: NONE VERT: NONE
SHEET NO. 169 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Chestnut Ridge\Chestnut Ridge_I-12.dwg



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-103.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

CHESTNUT RIDGE
LIFT STATION
PUMP NO.2
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-113	HORIZ: NONE VERT: NONE
SHEET NO. 170 OF 225	DRAWING SCALE

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HMI

CONTROL PANEL PLC

CONTROL BUILDING

480V

INFLUENT PUMPS MCC

INFLUENT PUMP NO. 1 | INFLUENT PUMP NO. 2 | INFLUENT PUMP NO. 3 | INFLUENT PUMP NO. 4 | INFLUENT PUMP NO. 5

SEAL FAIL ALARM | MOTOR OVERLOAD ALARM | MOTOR CURRENT | HIGH TEMP ALARM | IN HAND | IN AUTO | ON/OFF | START/ STOP

MA 1 | MO 1 | II 1 | TH 1 | HI 1 | IA 1 | YFS 1 | YCS 1

MA 2 | MO 2 | II 2 | TH 2 | HI 2 | IA 2 | YFS 2 | YCS 2

MA 3 | MO 3 | II 3 | TH 3 | HI 3 | IA 3 | YFS 3 | YCS 3

MA 4 | MO 4 | II 4 | TH 4 | HI 4 | IA 4 | YFS 4 | YCS 4

MA 5 | MO 5 | II 5 | TH 5 | HI 5 | IA 5 | YFS 5 | YCS 5

INFLUENT PUMP NO. 1 H/O/A RUN | INFLUENT PUMP NO. 2 H/O/A RUN | INFLUENT PUMP NO. 3 H/O/A RUN | INFLUENT PUMP NO. 4 H/O/A RUN | INFLUENT PUMP NO. 5 H/O/A RUN | INFLUENT PUMP NO. 6 H/O/A RUN

PRIMARY PLC | BACKUP PLC

INFLUENT PUMP CONTROL PANEL

ALARMS RESET | OIT

TO SHEET I-302

I-302

I-302

WET WELL

FS2 HIGH-HIGH LEVEL FLOAT SWITCH

FS1 HIGH LEVEL FLOAT SWITCH

LSH 3A | TSH 3A

LSH 2A | TSH 2A

LSH 1A | TSH 1A

LSH 4A | TSH 4A

LSH 5A | TSH 5A

LSH 6A | TSH 6A

M

INFLUENT DISCHARGE

INFLUENT DISCHARGE

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY

WASTE WATER | FACILITIES

STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-301

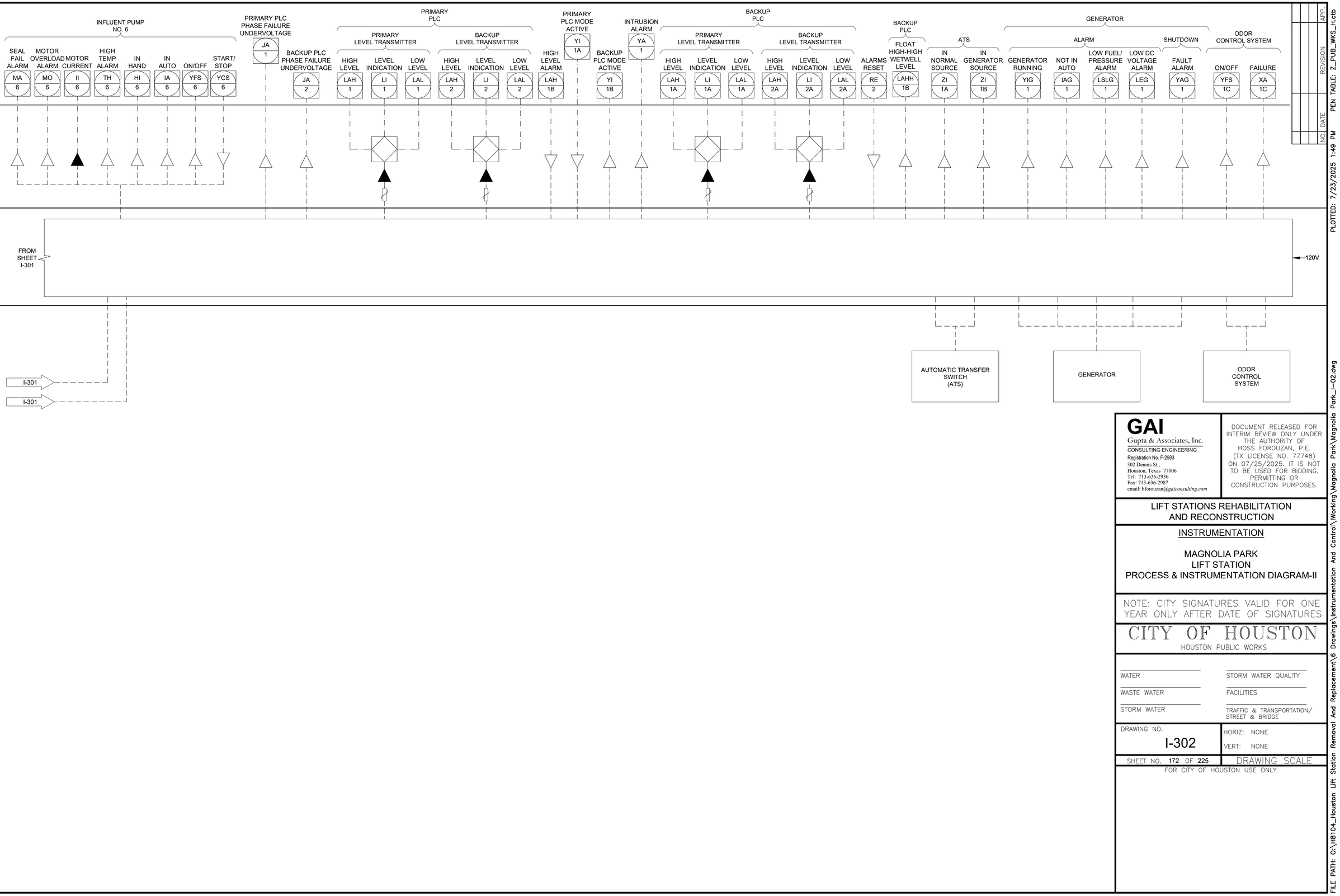
HORIZ: NONE

VERT: NONE

SHEET NO. 171 OF 225

DRAWING SCALE

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NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PROCESS & INSTRUMENTATION DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-302

HORIZ: NONE
VERT: NONE

SHEET NO. 172 OF 225

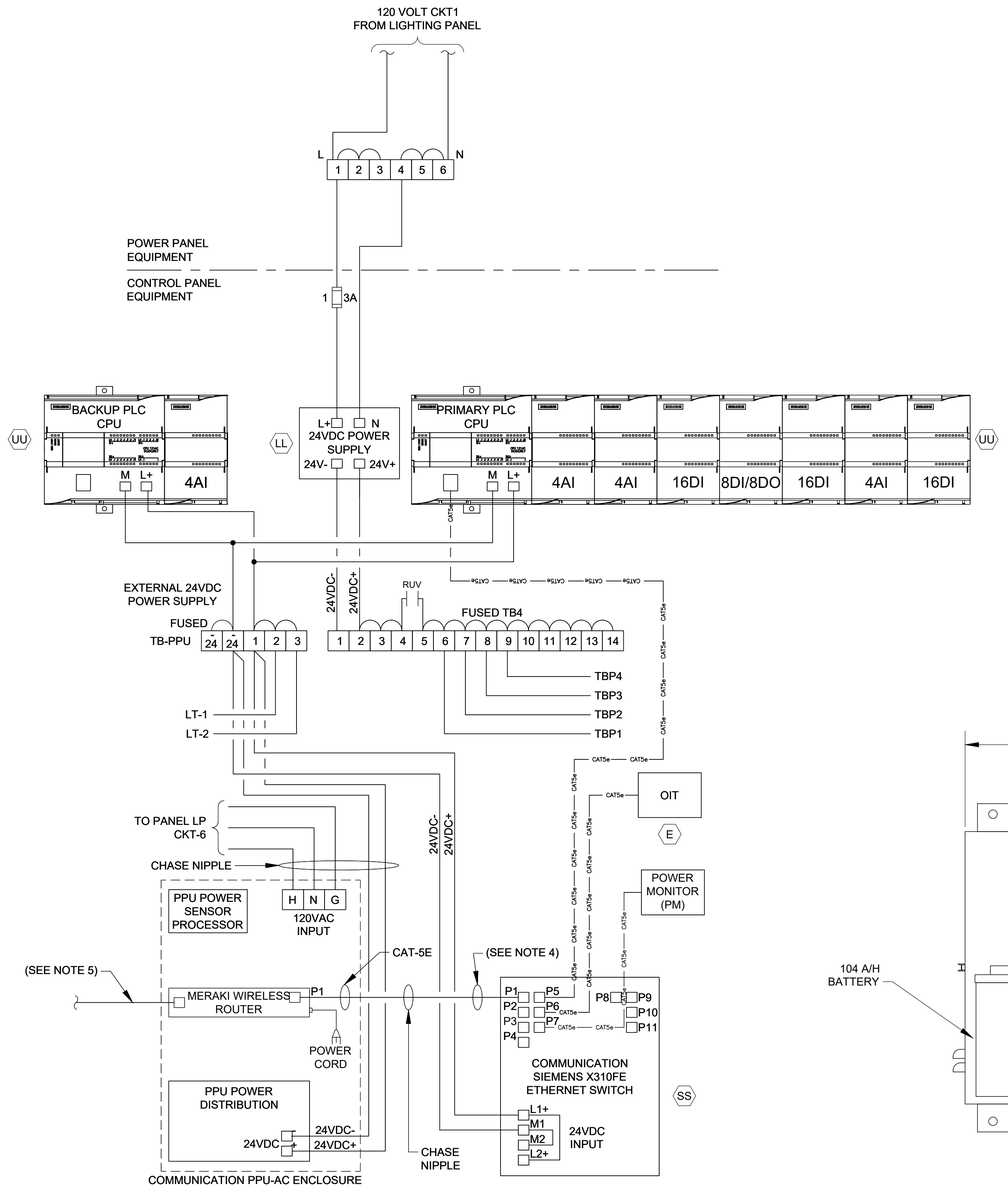
DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-02.dwg

NOTES:

1. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED WITH ITEM TAG, SEE DEVICE RATINGS SCHEDULE.
2. REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.
3. THE PLC POWER SUPPLY SHALL FEED THE 24VDC I/O.
4. ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. POE CABLE TO RADIO.
6. COMMUNICATION PPU-AC & SCADA SHALL BE PROVIDED BY CONTRACTOR INCLUDING TO RUN CONDUITS & WIRES.
7. COORDINATE WITH VENDOR TO PROVIDE PROPER VENTILATION WHERE APPLICABLE.

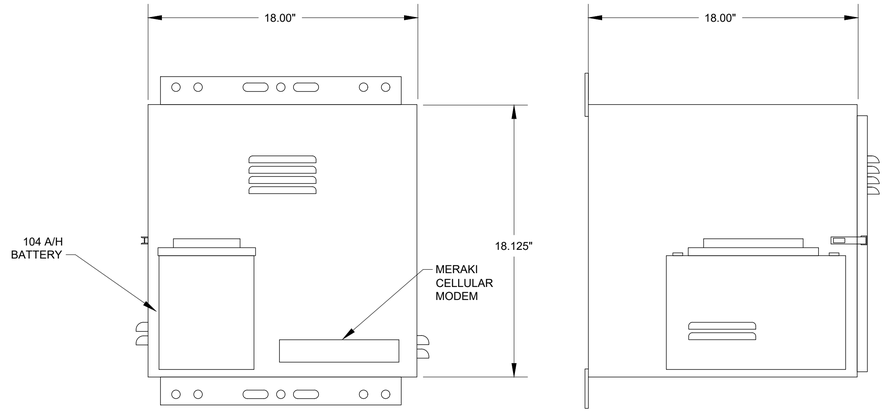


CONTROL POWER & COMMUNICATIONS WIRING

DIAGRAM

NTS

(SEE NOTE 2 & 6)



PPU-AC CONTROL ENCLOSURE

ELEVATION

NTS

(SEE NOTE 7)

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
COMMUNICATIONS DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-303	HORIZ: NONE VERT: NONE
SHEET NO. 173 OF 225	DRAWING SCALE

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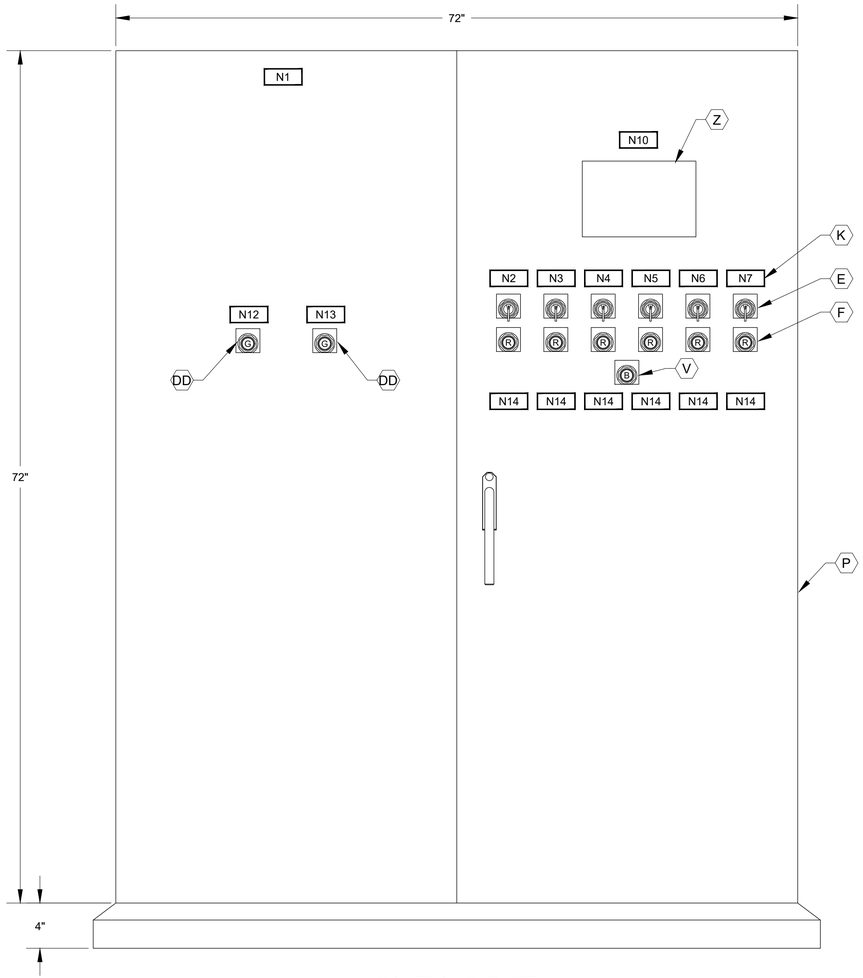
EQUIPMENT AND DEVICE SCHEDULE

ITEM	QUANTITY	DESCRIPTION
A	1	SINGLE CHANNEL INTRINSICALLY SAFE RELAY
B	2	ANALOG SIGNAL ISOLATOR
C	6	PUMP PROTECTION MODULE
D	*	NOT USED
E	6	HAND-OFF-AUTO SWITCH, 3 POSITION, HEAVY-DUTY OIL TIGHT WITH 2 SETS OF CONTACT BLOCKS (PUMP CONTROL)
F	6	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, RED, 24 VDC, LED, WITH "RUN" LEGEND
G	*	NOT USED.
H	1	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
I	2	DUPLEX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDED, GFCI TYPE
J	1	24" LED STRIP LIGHT 120V SUITABLE FOR ZERO DEGREE OPERATION.
K	*	NAMEPLATES, SEE SPECIFICATIONS (SEE NAMEPLATE SCHEDULE)
L	2	PROGRAMMABLE LOGIC CONTROLLER WITH EXPANSION UNIT
M	*	CONTROL RELAY 24VDC RELAY WITH THREE FORM C CONTACTS AND 11 PIN SOCKET BASE
N	-	NOT USED
O	-	NOT USED
P	1	NEMA 12 GASKETED STEEL ENCLOSURES WITHOUT VENTS 72" H X 20" D X 72" W
Q	*	TERMINAL BLOCK
R	1	WIRE DUCT 2" WIDE X 2" DEEP MINIMUM
S	1	GROUND BUS
T	1	COMMUNICATION ETHERNET SWITCH
U	9	CARTRIDGE
V	1	PUSHBUTTON, BLACK WITH RESET LEGEND
W	-	NOT USED
X	*	FUSED TERMINAL BLOCKS
Y	1	POWER SURGE PROTECTOR - CONTROL POWER
Z	1	PROGRAMMING SCREEN (OIT)
AA	*	120VAC SYSTEM FUSES
BB	1	120VAC - 24VDC POWER SUPPLY, 5A
CC	*	NOT USED
DD	2	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, GREEN, 24VDC, LED WITH "BACKUP PLC" & "PRIMARY PLC" LEGEND
EE	2	ANALOG I/O SURGE SUPPRESSOR
FF	-	NOT USED

* - AS SCHEDULED

NAMEPLATE SCHEDULE

DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION
N2	PUMP NO. 1
N3	PUMP NO. 2
N4	PUMP NO. 3
N5	PUMP NO. 4
N6	PUMP NO. 5
N7	PUMP NO. 6
N8	NOT USED.
N9	NOT USED.
N10	PROGRAMMING SCREEN
N11	NOT USED.
N12	PRIMARY PLC
N13	BACKUP PLC
N14	MOTOR DATA HORSEPOWER (OUTPUT) ---------- RPM AT FULL LOAD ---------- TIME RATING ---------- FREQUENCY ---------- NUMBER OF PHASES ---------- MODEL NUMBER ---------- RATED VOLTAGE ---------- SERVICE FACTOR ---------- FULL LOAD AMPS ---------- INSULATION CLAS ---------- NEMA DESIGN LETTER ---------- TEMPERATURE RISE ---------- NEMA FRAME SIZE ---------- DATE OF MANUFACTURE ---------- THERMO PROTECTION (IF REQUIRED) -- MOISTURE PROTECTION (IF REQUIRED)-



CONTROL CABINET
FRONT DOOR ELEVATION

GENERAL NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.
2. REFER SPECIFICATIONS FOR ALL PANEL COMPONENTS.

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb
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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT & SCHEDULE

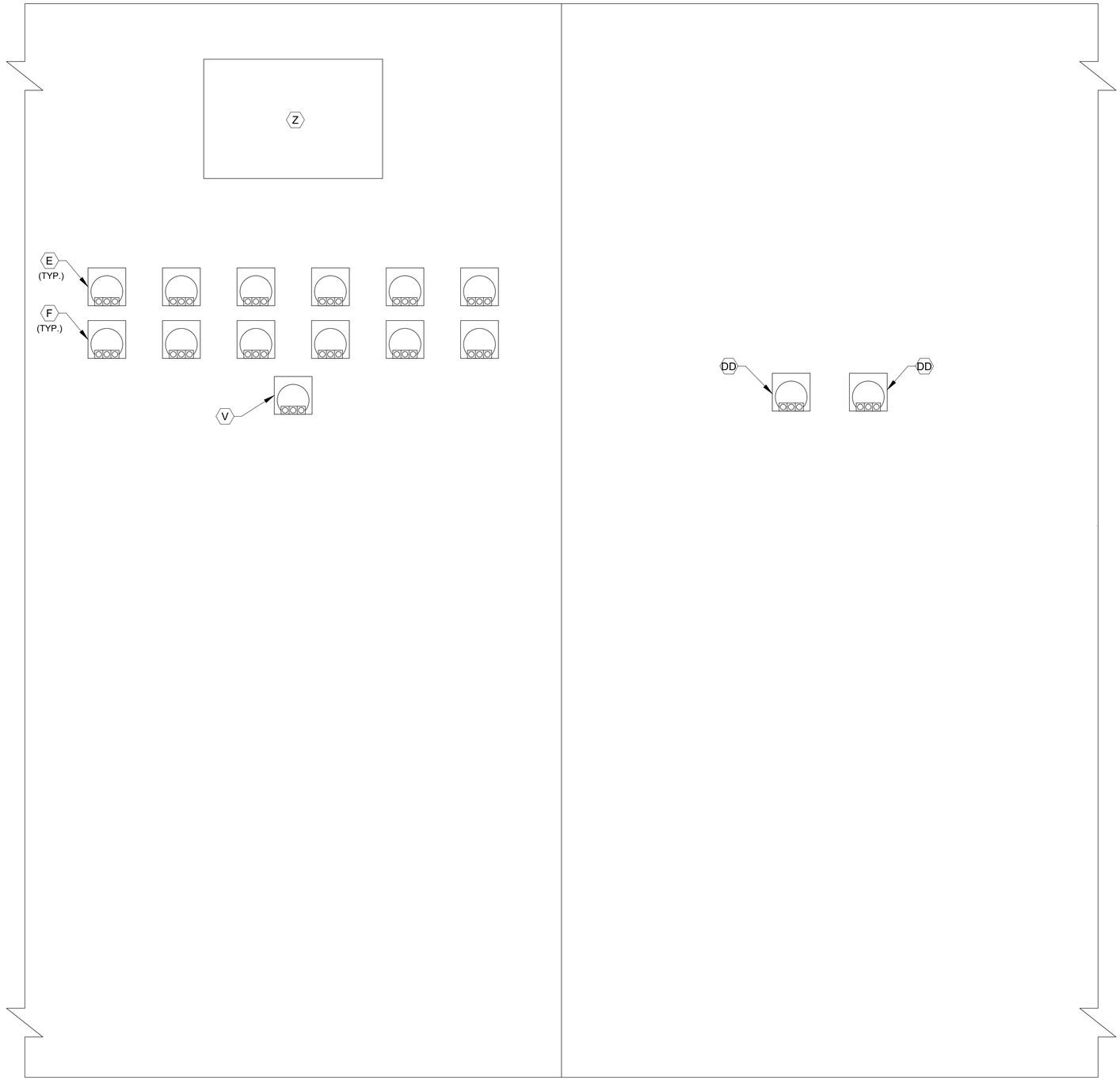
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-304
HORIZ: NONE
VERT: NONE
SHEET NO. 174 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-04.dwg



CONTROL CABINET
BACK DOOR ELEVATION

NOTES:

1. SEE SHEET I-304 FOR EQUIPMENT SCHEDULE.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL CABINET
BACK DOOR ELEVATION

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-305

HORIZ: NONE
VERT: NONE

SHEET NO. 175 OF 225

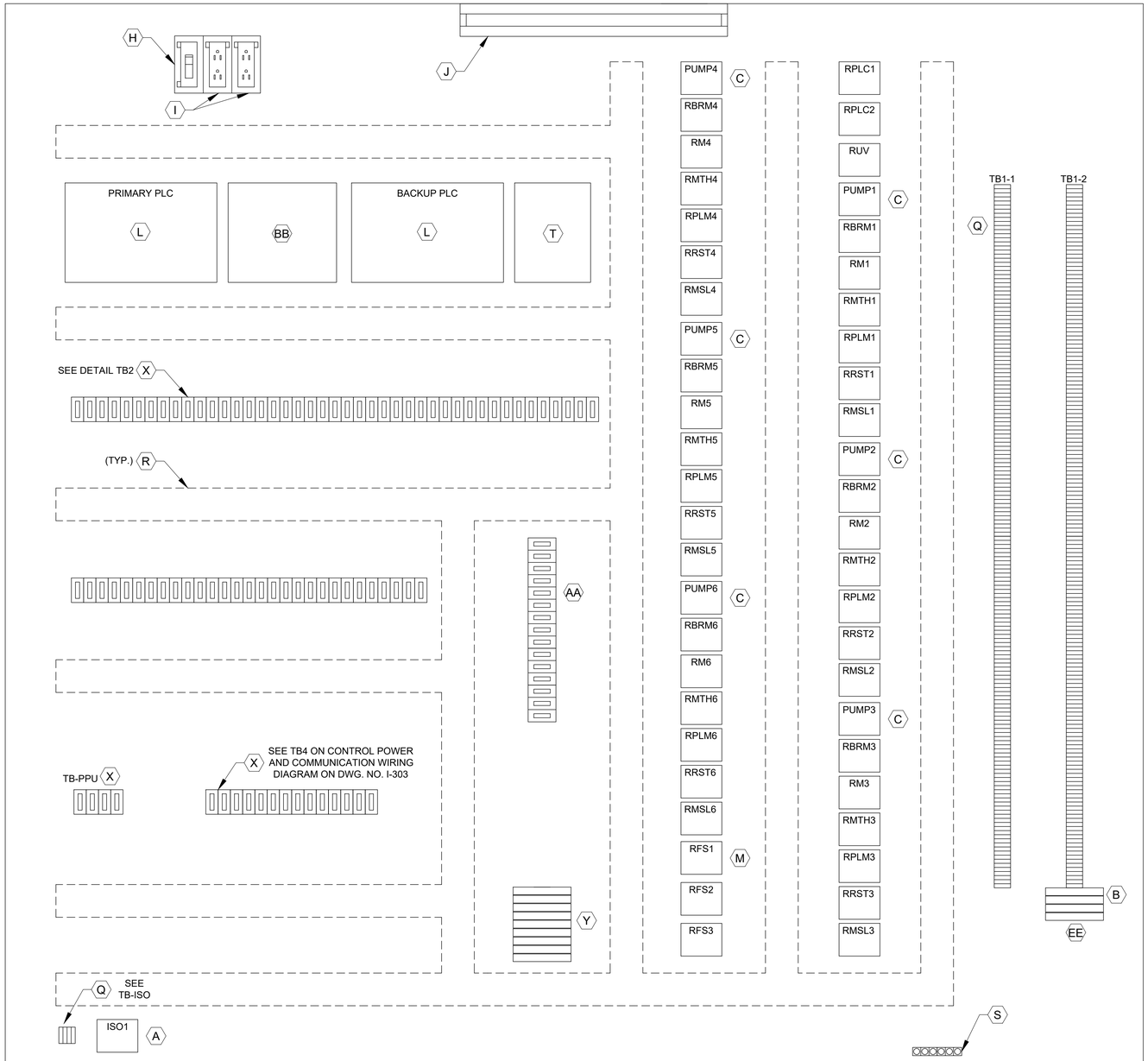
DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-05.dwg



CONTROL PANEL
ELEVATION

LEGEND	
TAG	DESCRIPTION
RMTH	MOTOR HIGH TEMPERATURE ALARM RELAY
RPLMP	PLC PUMP RUN RELAY
RRST	PUMP RESET AUX RELAY
RPLC	PLC MODE AUX RELAY
RM	PUMP RUN AUX RELAY
RUV	UNDER VOLTAGE RELAY
RBRM	BACKUP SYSTEM RUN RELAY
ISO	INTRINSICALLY SAFE RELAY
RFS	PUMP RUN FLOAT SWITCH RELAY
RMSL	MOTOR SEAL LEAK ALARM RELAY
RFLP	FLOAT LOCKOUT PUMP RELAY

DETAIL TB-ISO
1500
1501
1503
1504

DETAIL TB1-1
L1A
L1N
SPARE
3
3N
SPARE
49
50
51
52
53
54
1004
1
24V-
24V-
SPARE
1002
2
11
1001
1001A
12
1003
1003A
34
3N
SPARE
SPARE
102
103
3P1
109
110
112
116
117
120
121
122
123
124
125
126
127
SPARE
SPARE
202
203
3P2
209
210
212
216
217
220
221
222
223
224
225
226
227

DETAIL TB1-2
SPARE
SPARE
302
303
3P3
309
310
312
316
317
320
321
322
323
324
325
326
327
SPARE
SPARE
402
403
3P4
409
410
412
416
417
420
421
422
423
424
425
426
427
SPARE
SPARE

DETAIL TB1-2
502
503
3P5
509
510
512
516
517
520
521
522
523
524
525
526
527
SPARE
SPARE
602
603
3P6
609
610
612
616
617
620
621
622
623
624
625
626
627

DETAIL TB2
36A
37A
50
52
54
52A
52A
54A
L+
M
35B
38B
41B
44B
SPARE
SPARE
47B
50B
53B
13B
13AB
B
L+
M
14B
14AB
14GB
119
SPARE
L+
M
13
13A
13G
14
14A
14G
1M
2M
1L
3
30
32
34
37
38
41
33B
45
18B
SPARE

DETAIL TB2
100
112
113
114
115
117
118
119
120
121
SPARE
200
212
213
214
215
217
218
219
220
221
SPARE
300
312
313
314
315
317
318
319
320
321
SPARE
400
412
413
414
415
417
418
419
420
421
SPARE

DETAIL TB2
500
512
513
514
515
517
518
519
520
521
SPARE
600
612
613
614
615
617
618
619
620
621
SPARE

NOTES:

1. SEE SHEET I-4 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT

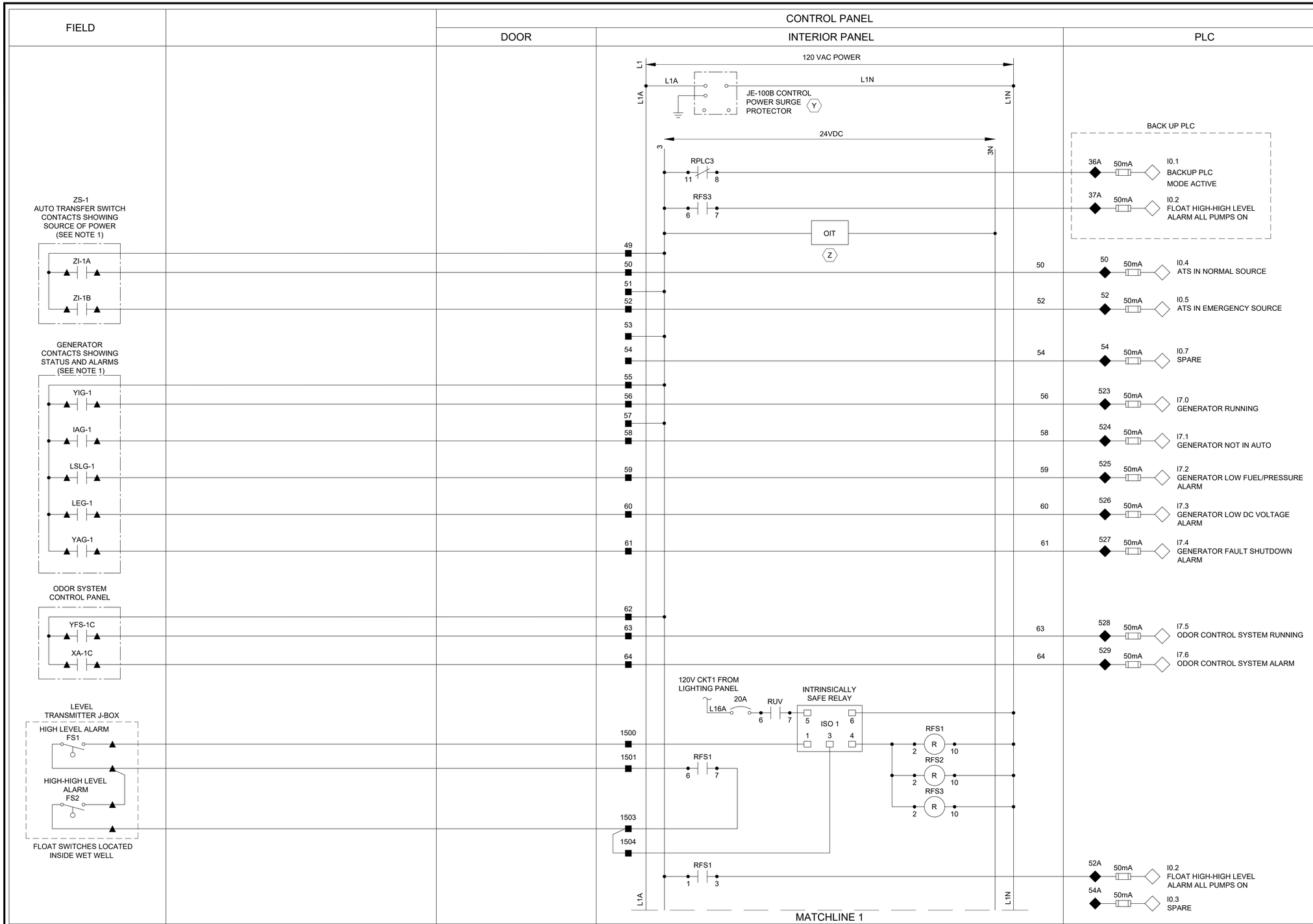
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-306
HORIZ: NONE
VERT: NONE
SHEET NO. 176 OF 225
DRAWING SCALE
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NOTES:

1. PROVIDE AUTO TRANSFER SWITCH AND GENERATOR DRY CONTACT.
2. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL WIRING DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

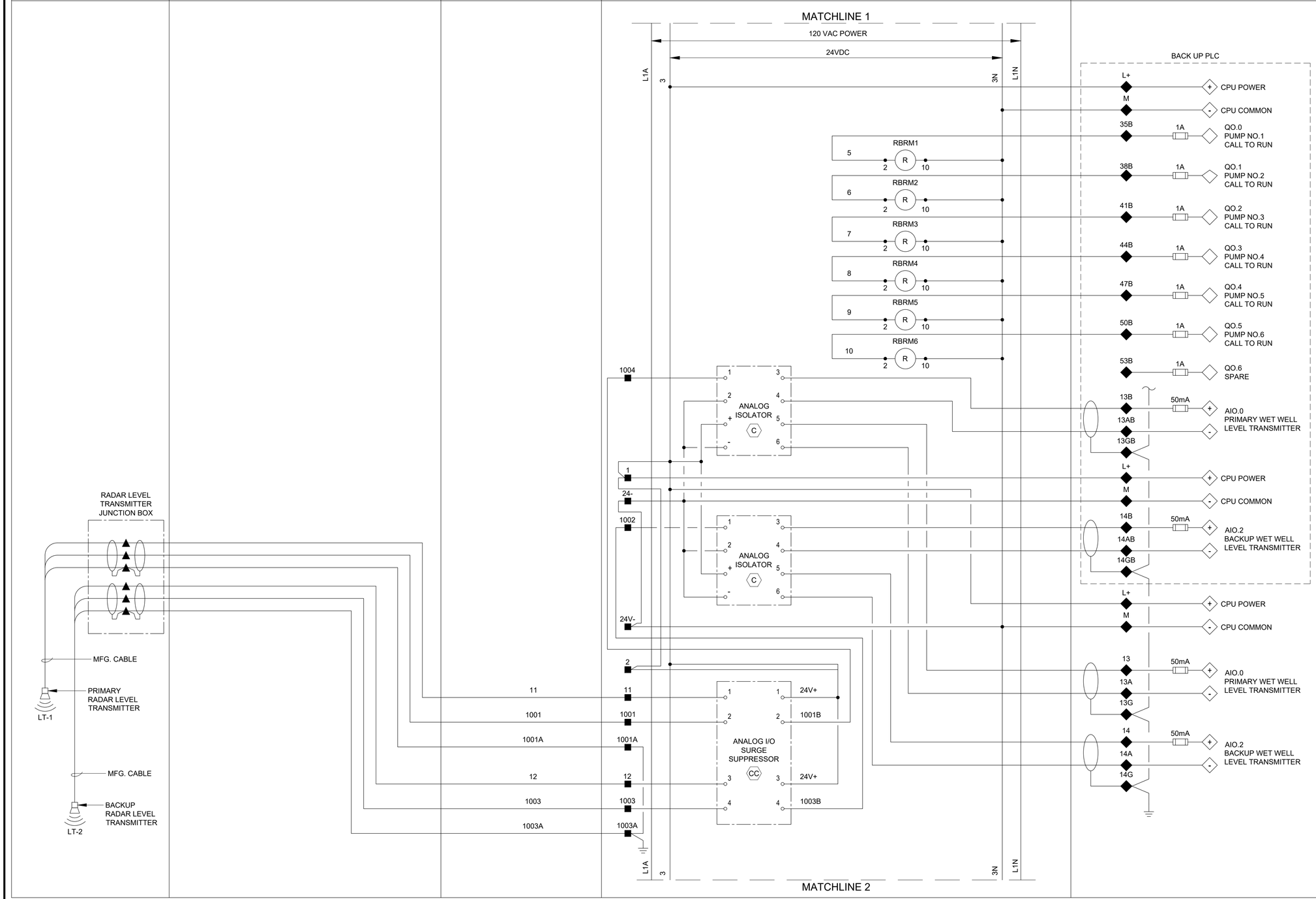
DRAWING NO. I-307	HORIZ: NONE VERT: NONE
SHEET NO. 177 OF 225	DRAWING SCALE

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NO.	DATE	REVISION	APP.

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FIELD	MOTOR CONTROL CENTER (INDOOR)	CONTROL PANEL	
		DOOR	INTERIOR PANEL



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL WIRING DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO.	HORIZ: NONE
I-308	VERT: NONE
SHEET NO. 178 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-08.dwg

FIELD | MOTOR CONTROL CENTER | CONTROL PANEL: DOOR | INTERIOR PANEL | PLC

MATCHLINE 2

120 VAC POWER

24VDC

L1A 24+ 24- L1N

M1 M2 M3 M4 M5 9 — 19

10 — 20

RFLP: 2 R 10

L1

N

MS

MOTION SWITCH

L1

N

MS

MOTION SWITCH

34 — 34

RUV: 2 R 10

RPLC1: 2 R 10

RPLC2: 2 R 10

RPLC3: 2 R 10

YI-1 G PRIMARY PLC

RPLC3: 6 5

YI-2 G BACKUP PLC

ØA ØB ØC

JE-100D PHASE MONITOR

7 8 9 10 11 12

N/C

YI-2 BUILDING EXTERIOR ALARM LIGHT R

RUV: 11 9

L1A 24+ 24- L1N

MATCHLINE 3

1M			DI COMMON
2M			AI COMMON
1L			DO POWER
3			DO POWER
30	1A		Q0.0 SPARE
32	50mA		I0.0 PLC INTRUSION ALARM
34	50mA		I0.1 PHASE FAILURE UNDER VOLTAGE
37	50mA		I0.3 SPARE
38	50mA		Q0.1 PLC MODE ACTIVE
41	50mA		I0.2 SPARE
BACK UP PLC			
33B	50mA		Q0.6 SPARE
45	50mA		Q0.2 HIGH LEVEL ALARM
BACK UP PLC			
18B	50mA		I0.0 PHASE FAILURE UNDER VOLTAGE

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
CONTROL WIRING DIAGRAM-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

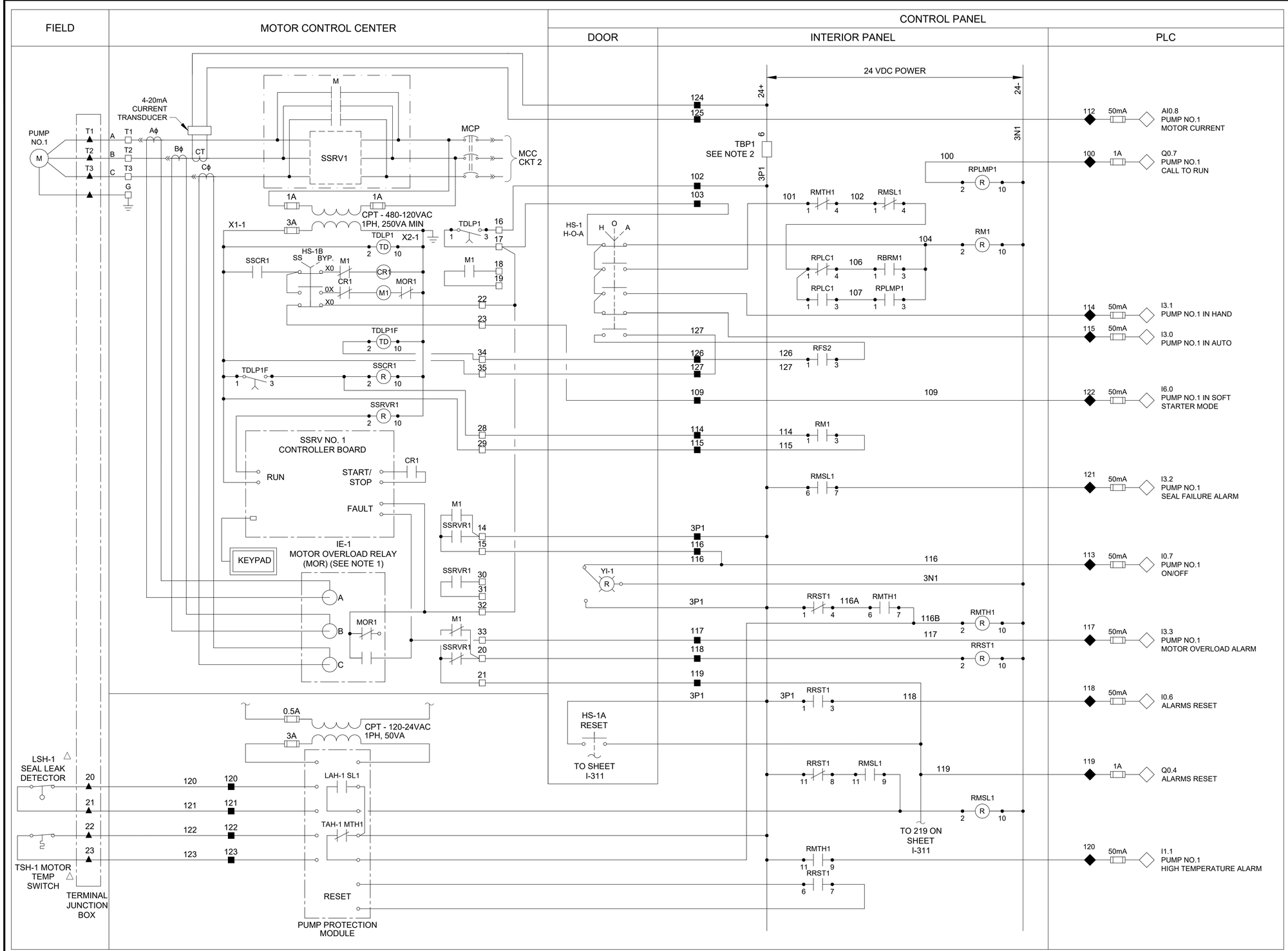
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-309	HORIZ: NONE VERT: NONE
SHEET NO. 179 OF 225	DRAWING SCALE

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LEGEND

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- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED. OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-303
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.1
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

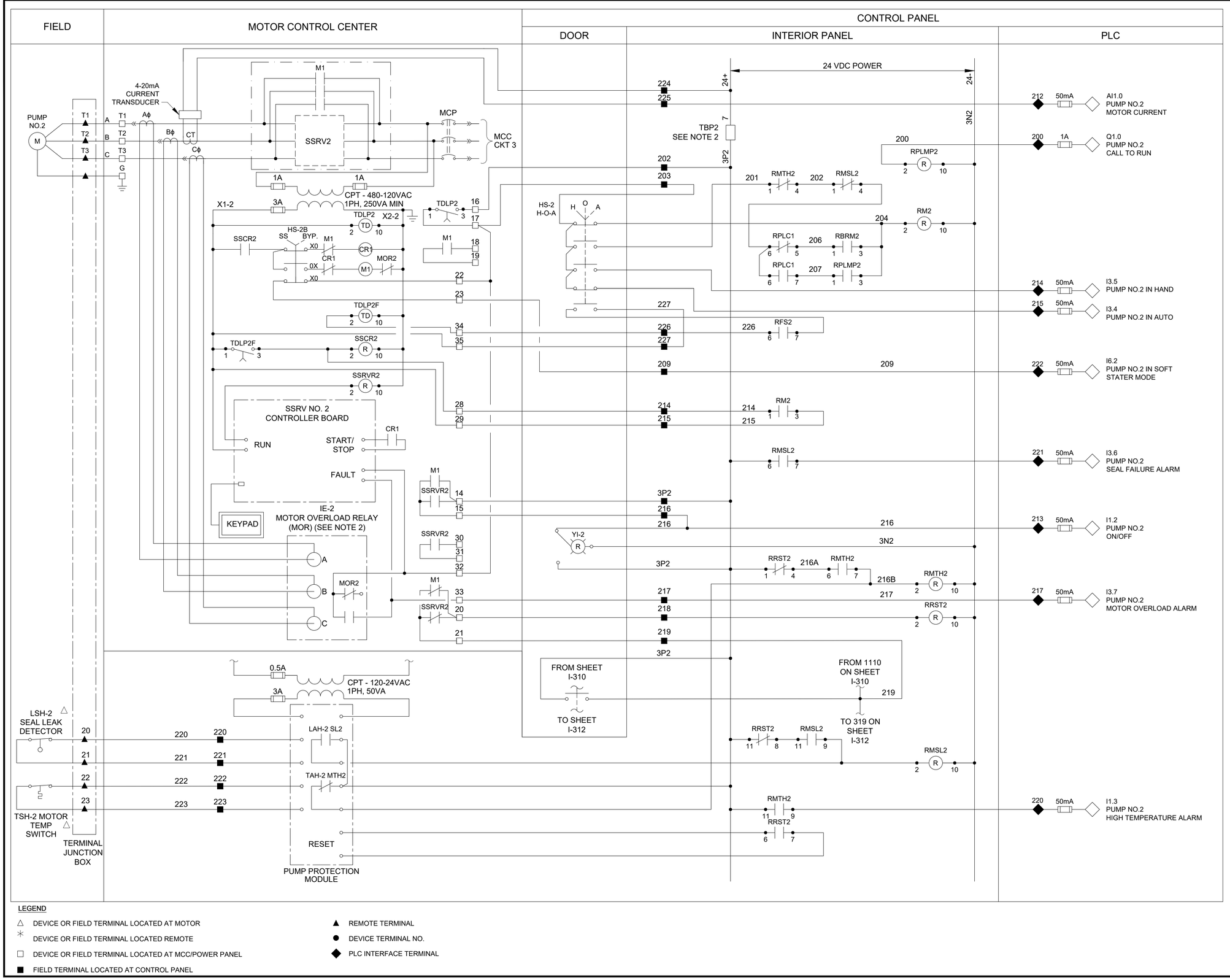
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-310
HORIZ: NONE
VERT: NONE
SHEET NO. 180 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb
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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-10.dwg



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-303.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.2
CONTROL WIRING DIAGRAM

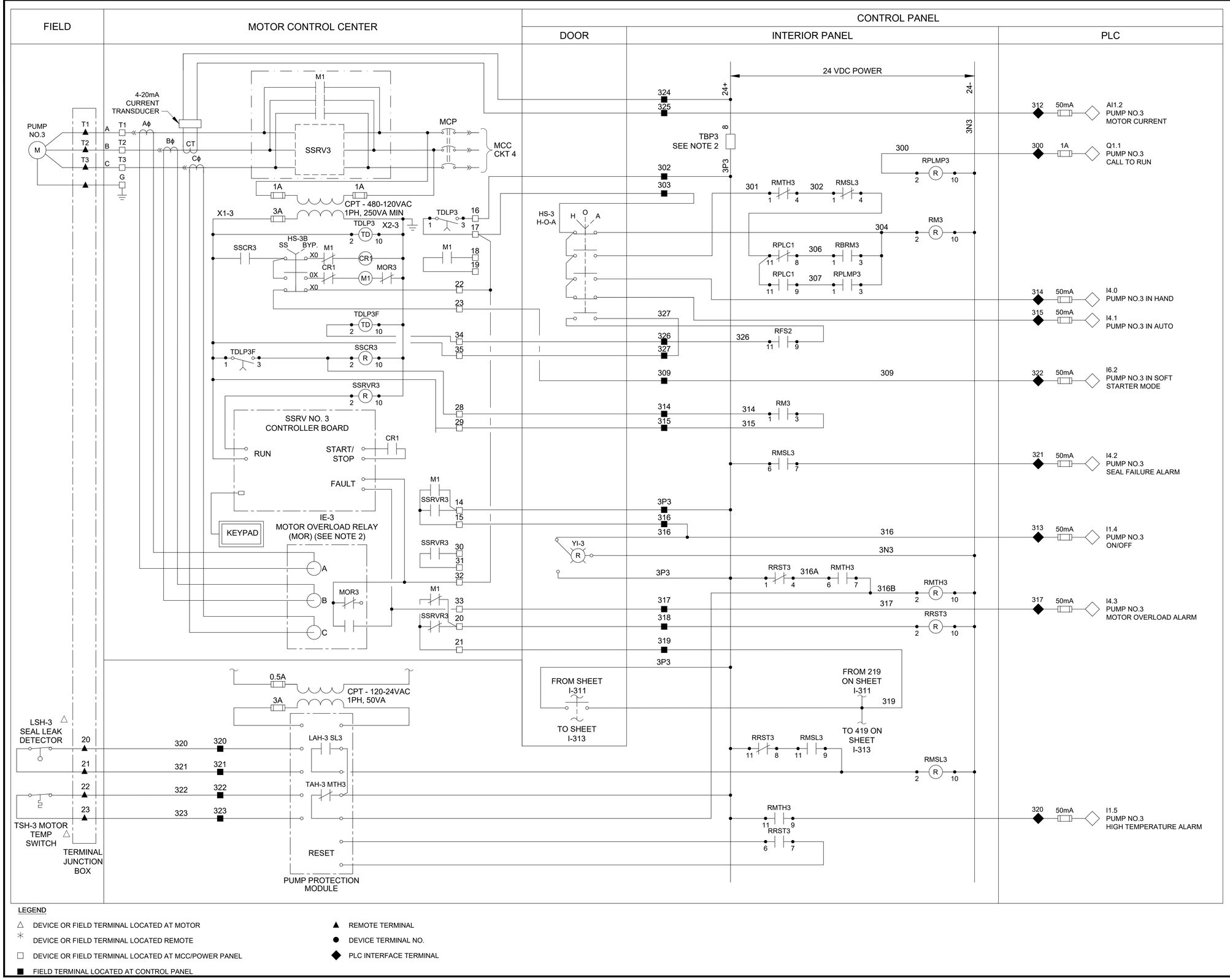
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-311	HORIZ: NONE VERT: NONE
SHEET NO. 181 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY



LEGEND

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- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
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- ◆ PLC INTERFACE TERMINAL

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NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.3
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

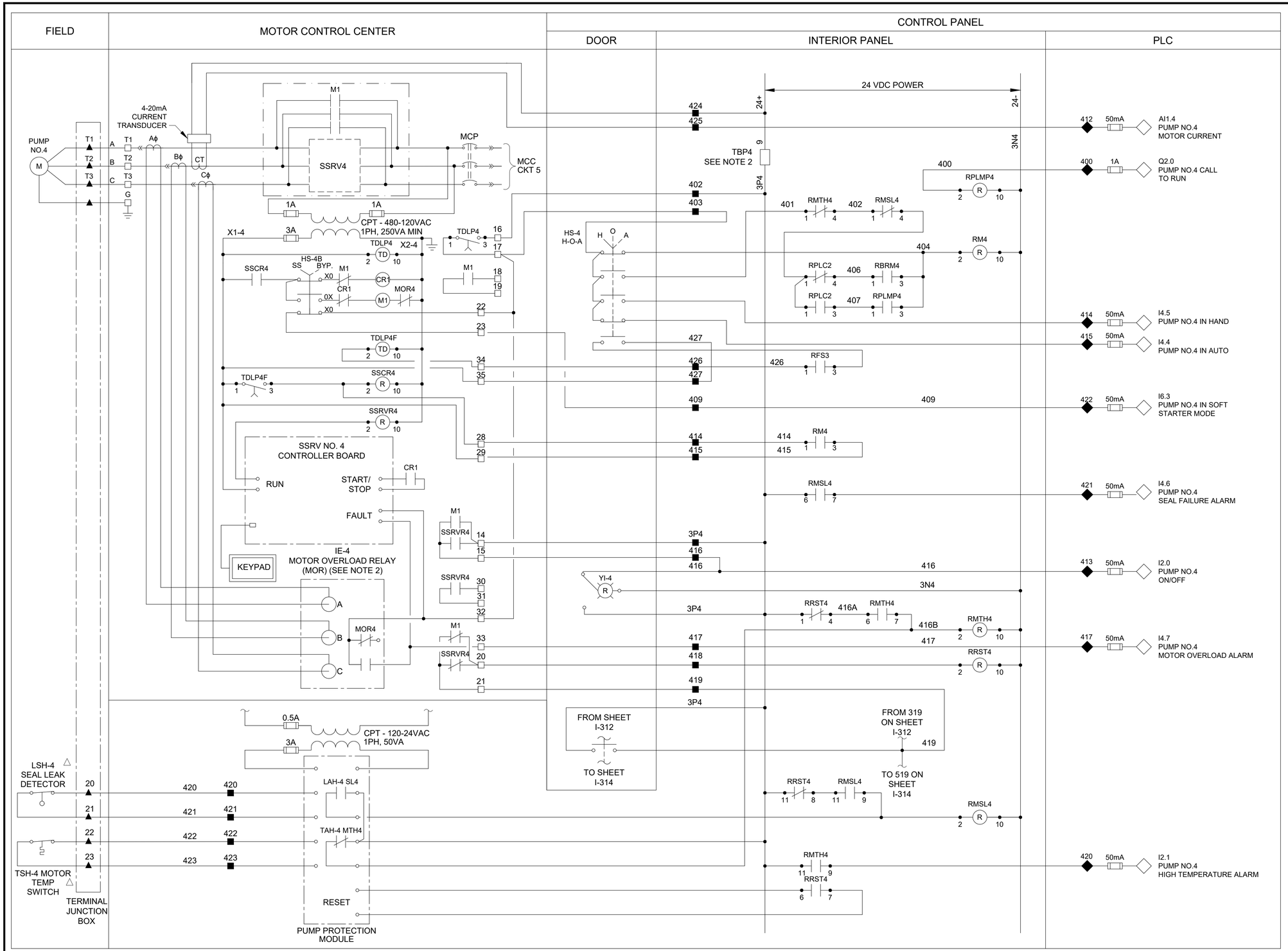
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-312	HORIZ: NONE VERT: NONE
SHEET NO. 182 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-12.dwg



LEGEND

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- ◆ PLC INTERFACE TERMINAL

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.4
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-313

HORIZ: NONE
VERT: NONE

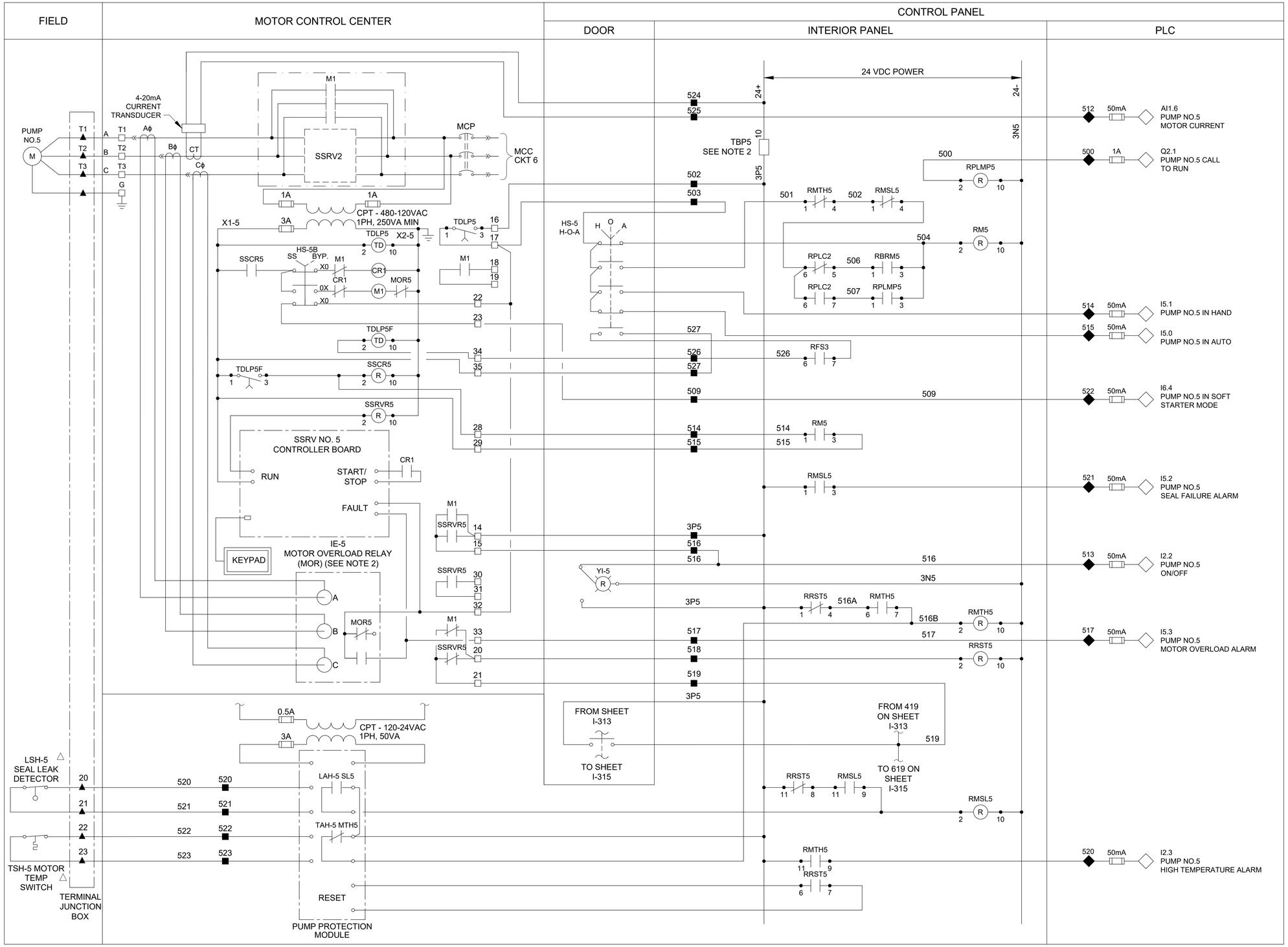
SHEET NO. 183 OF 225

DRAWING SCALE

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NO.	DATE	REVISION	APP.

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Magnolia Park\Magnolia Park_I-13.dwg



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NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.5
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

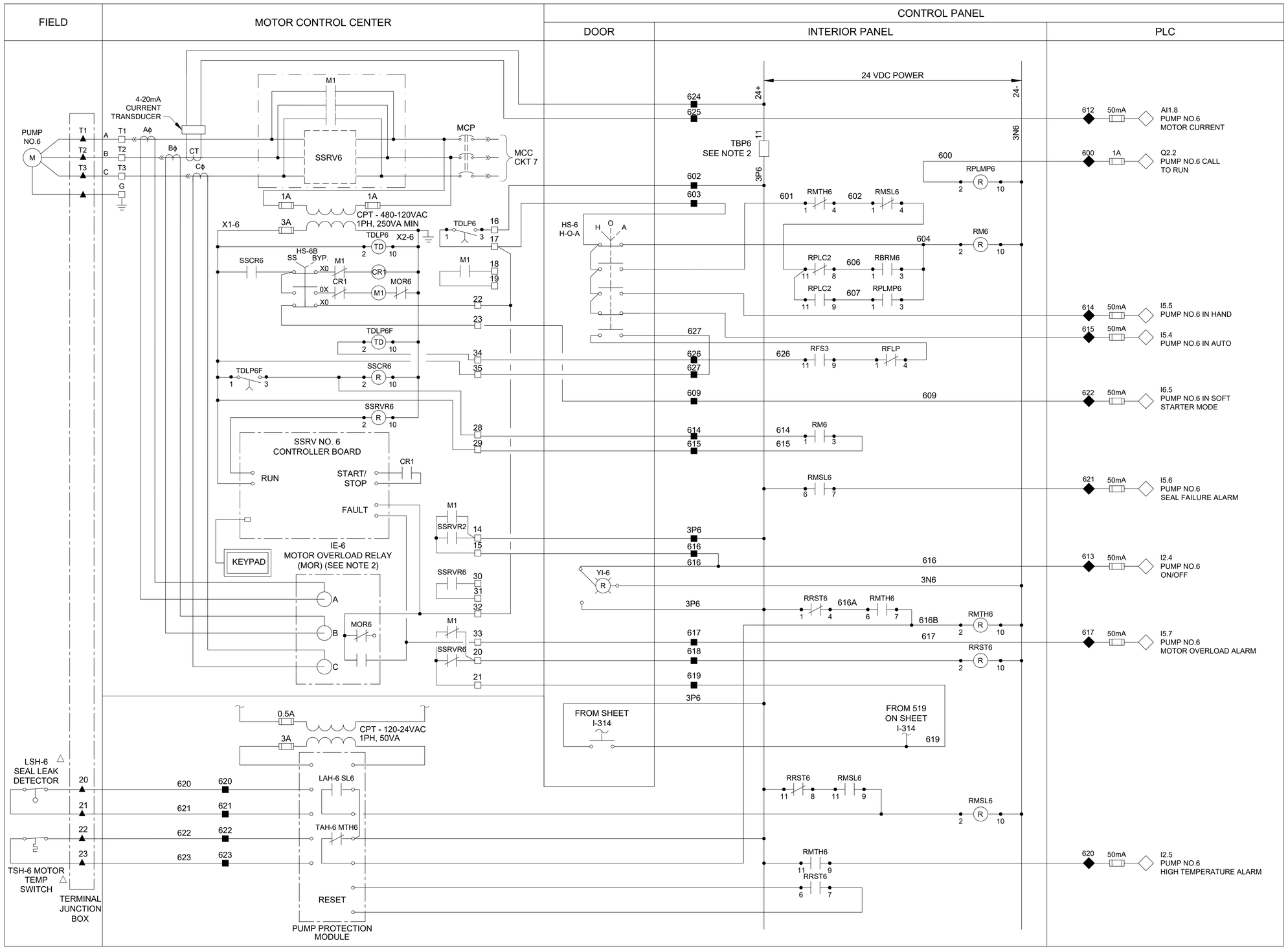
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-314	HORIZ: NONE VERT: NONE
SHEET NO. 184 OF 225	DRAWING SCALE

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LEGEND

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

MAGNOLIA PARK
LIFT STATION
PUMP NO.6
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

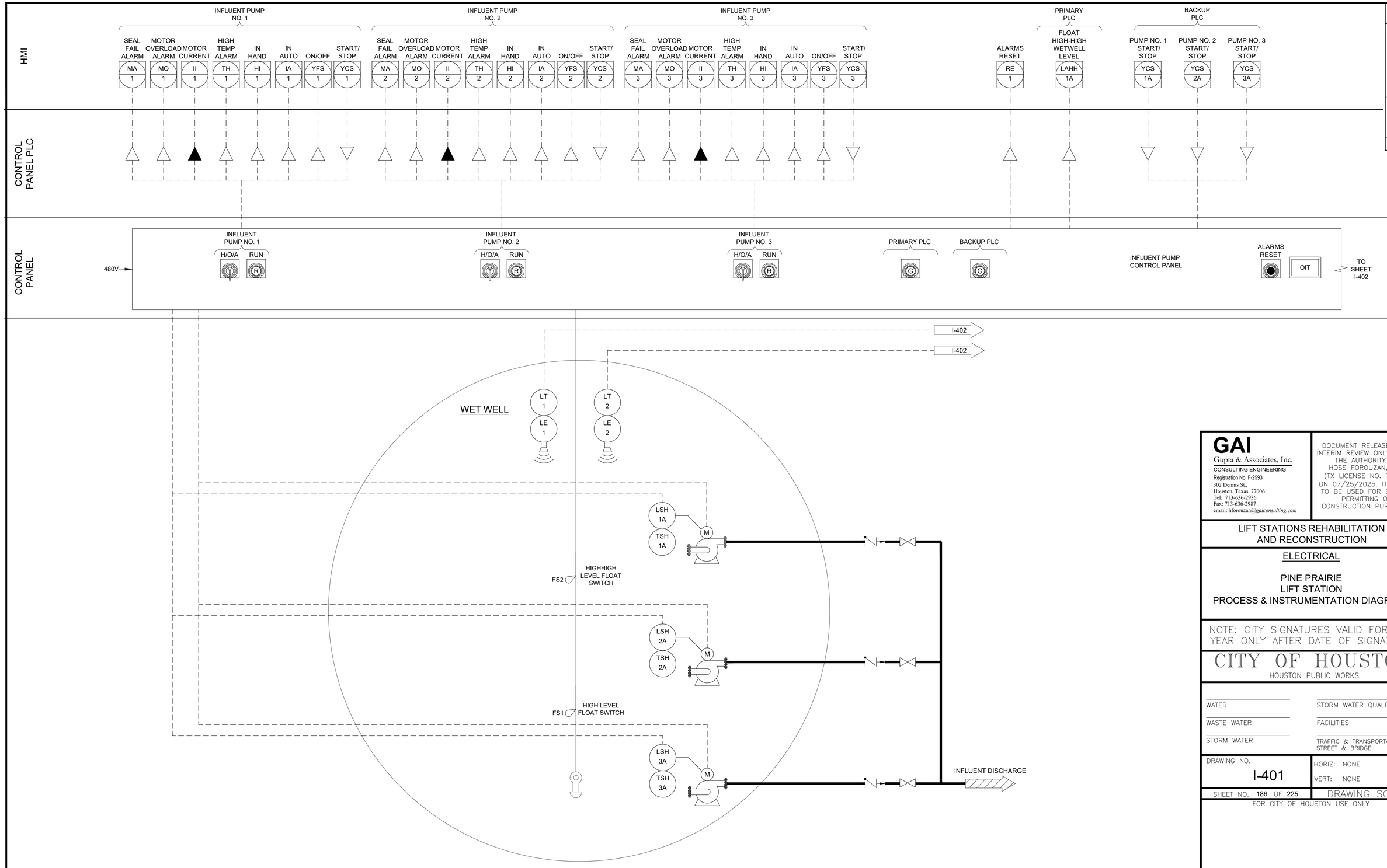
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SHEET NO. 185 OF 225	DRAWING SCALE

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NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

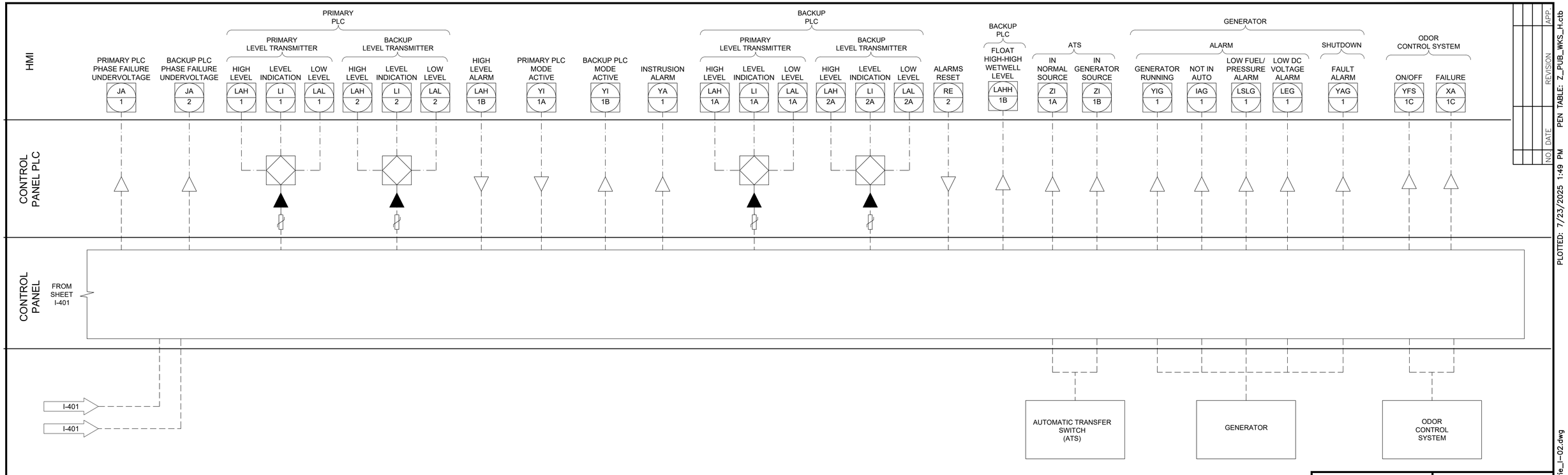
DRAWING NO. I-401	HORIZ: NONE VERT: NONE
SHEET NO. 186 OF 225	DRAWING SCALE

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NO.	DATE	REVISION	APP.

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-01.dwg



NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

PINE PRAIRIE
LIFT STATION
PROCESS & INSTRUMENTATION DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-402

HORIZ: NONE
VERT: NONE

SHEET NO. 187 OF 225

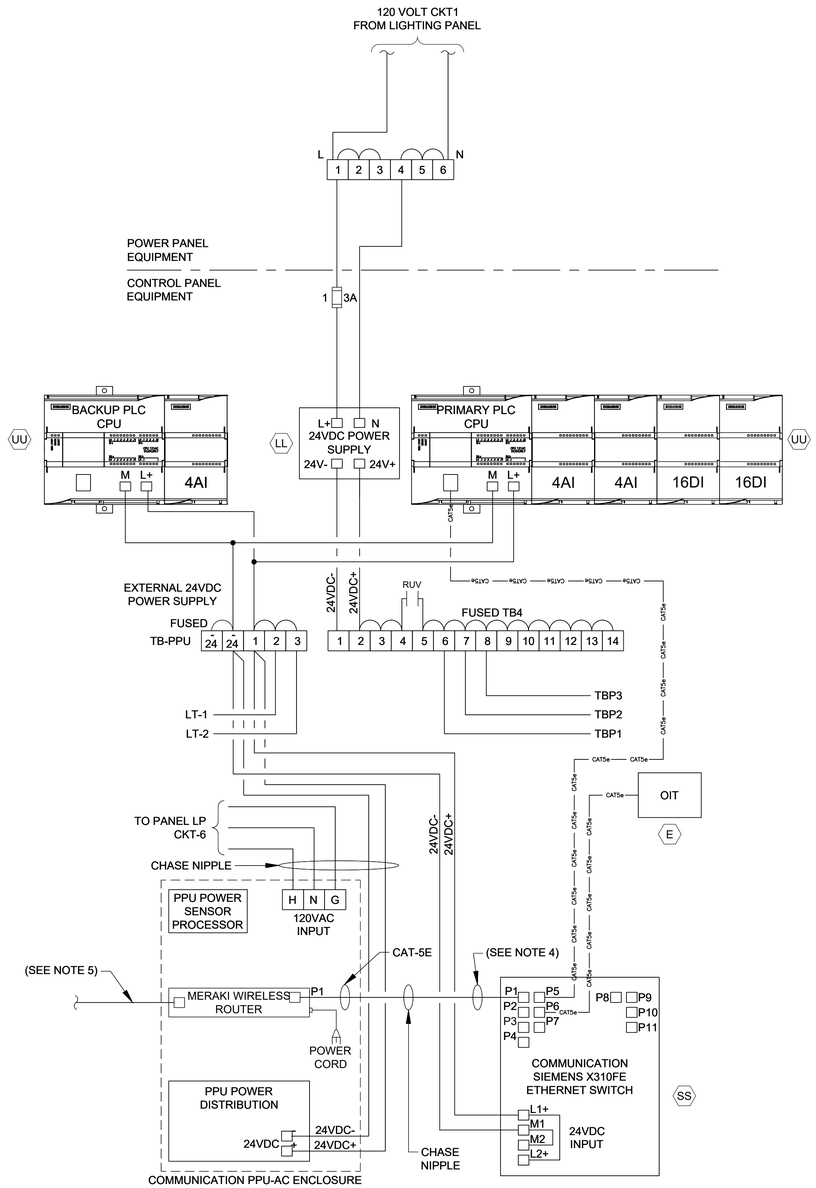
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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-02.dwg

NOTES:

1. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED WITH ITEM TAG, SEE DEVICE RATINGS SCHEDULE.
2. REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.
3. THE PLC POWER SUPPLY SHALL FEED THE 24VDC I/O.
4. ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. POE CABLE TO RADIO.
6. COMMUNICATION PPU-AC & SCADA SHALL BE PROVIDED BY CONTRACTOR INCLUDING TO RUN CONDUITS & WIRES.
7. COORDINATE WITH VENDOR TO PROVIDE PROPER VENTILATION WHERE APPLICABLE.

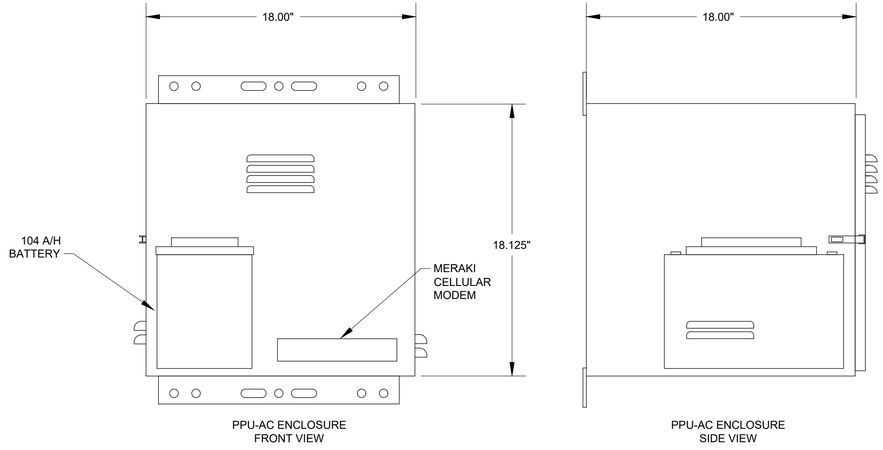


CONTROL POWER & COMMUNICATIONS WIRING

DIAGRAM

NTS

(SEE NOTE 2 & 6)



PPU-AC CONTROL ENCLOSURE

ELEVATION

NTS

(SEE NOTE 7)

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
COMMUNICATIONS DIAGRAM

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-403

HORIZ: NONE

VERT: NONE

SHEET NO. 188 OF 225

DRAWING SCALE

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NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

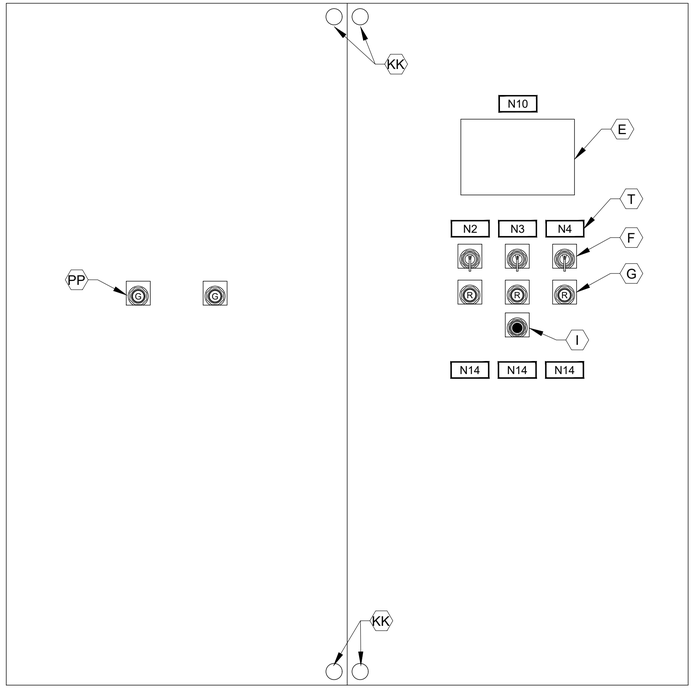
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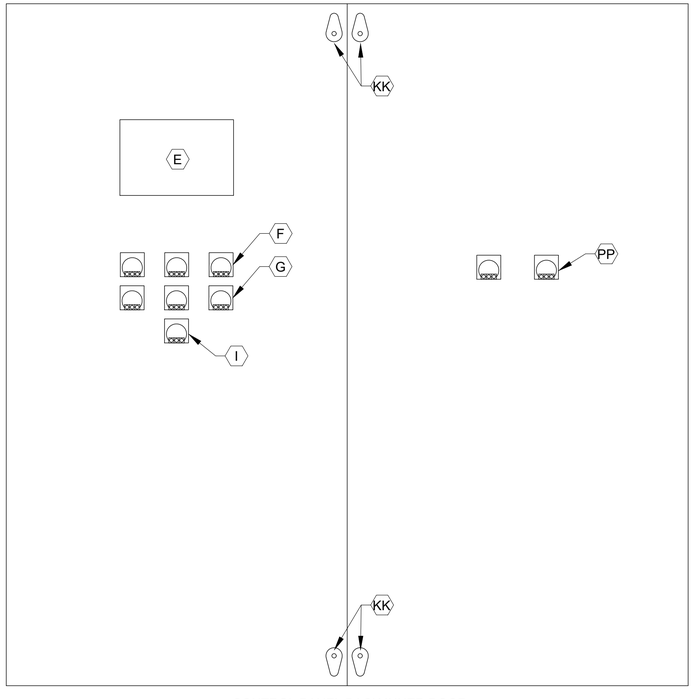
EQUIPMENT AND DEVICE SCHEDULE

ITEM	QUANTITY	DESCRIPTION
A	1	PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100A, 12 CKTS
B	2	FULL VOLTAGE, NON-REVERSING, SINGLE SPEED, AUTOMATIC MOTOR STARTER W/120 VOLT CONTROL COIL, NEMA SIZE AS SCHEDULED.
C	2	TIME DELAY RELAY WITH THREE FORM C CONTACTS, 120VAC COIL AND 11 PIN SOCKET BASE.
D	1	SINGLE CHANNEL INTRINSICALLY SAFE RELAY
E	1	PROGRAMMING SCREEN (OIT)
F	3	HAND-OFF-AUTO SWITCH, 3 POSITION, HEAVY-DUTY, OILTIGHT WITH 2 SETS OF CONTACT BLOCKS (PUMP CONTROL)
G	3	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, RED, 24 VDC, LED, WITH "RUN" LEGEND
H	1	PERPETUAL POWER UNIT (PPU)
I	1	PUMP ALARM RESET PUSHBUTTON
J	2	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
K	3	DUPLEX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDED
L	2	24" LED STRIP LIGHT 120V SUITABLE FOR ZERO DEGREE OPERATION.
M	1	SURGE PROTECTOR - INCOMING POWER
N	*	NOT USED.
P	2	CURRENT TRANSFORMER, RATIO AS SCHEDULED W/4-20mA OUTPUT.
Q	12	TERMINAL BLOCKS, SIZED FOR MOTOR POWER REQUIREMENTS
R	*	RELAY WITH THREE FORM C CONTACTS, AND 11 PIN SOCKET BASE
S	*	NOT USED.
T	*	NAMEPLATES, SEE SPECIFICATIONS (SEE NAMEPLATE SCHEDULE)
U	2	SOLID STATE MOTOR OVERLOAD RELAY
V	6	FUSE HOLDER & FUSES - PHASE FAILURE
W	1	NEMA 3R GASKETED ALUMINUM ENCLOSURE WITHOUT VENTS 72"H x 48"w x 36"D
X	1	DOOR MOUNTED ROTARY HANDLE DISCONNECT SWITCH (SUITABLE FOR ENVIRONMENT)
Y	1	THERMAL-MAGNETIC MOLDED CASE MAIN CIRCUIT BREAKER, SIZE AS SCHEDULED
Z	2	ADJUSTABLE INSTANTENOUS TRIP MOTOR CIRCUIT PROTECTOR, SIZE AS SCHEDULED
AA	*	TERMINAL BLOCKS
BB	2	EXTERNAL OVERLOAD RESET PUSHBUTTON MECHANISM
CC	2	ANALOG I/O SURGE SUPPRESSOR
DD	1	WIRE DUCT 2" WIDE x 2" DEEP MINIMUM
EE	1	THERMAL-MAGNETIC MODLED CASE CIRCUIT BREAKER FOR LIGHTING TRANSFORMER, SIZE AS SCHEDULED
FF	1	GROUND BUS
GG	1	25 KVA, 480 - 240/120V,1ϕ, 3W DRY TYPE NEMA 3R ENCLOSURE TRANSFORMER (PAD MOUNTED)
HH	*	NOT USED.
II	1	120VAC - 24VAC POWER SUPPLY (AS REQUIRED)
JJ	11	CARTRIDGE FUSES & FUSE HOLDER
KK	8	QUARTER TURN CAPTIVE DOOR CLOSURE
LL	1	120VAC - 24VDC PLC POWER SUPPLY 5A
MM	2	MOTION SWITCH
NN	*	NOT USED
PP	2	INDICATING LED LIGHT, HEAVY DUTY, OILTIGHT, GREEN, 24 VDC, LED WITH " PRIMARY PLC" & "BACKUP PLC" LEGEND
QQ	*	NOT USED
RR	*	NOT USED
SS	1	COMMUNICATION ETHERNET SWITCH
TT	1	POWER SURGE PROTECTOR - CONTROL POWER
UU	2	PROGRAMMABLE LOGIC CONTROLLER WITH EXPANSION UNIT
VV	1	PHASE AND UNDER VOLTAGE MONITOR
WW	*	FUSED TERMINAL BLOCKS
XX	2	PUMP PROTECTION MODULE RATED FOR CLASS I, DIVISION I
YY	2	ANALOG SIGNAL ISOLATOR
ZZ	-	NOT USED.
AB	-	NOT USED.
AC	1	POWER DISTRIBUTION BLOCK
AD	1	NEUTRAL LUG
AE	1	6" EXHAUST FAN, 120V, STAINLESS FILTERS & GRILL PACKAGE W/BUG GUARD
AF	1	T-STAT FOR EXHAUST FAN

* - AS SCHEDULED



CONTROL PANEL FRONT INNER DOOR
ELEVATION
NTS



CONTROL PANEL BACK INNER DOOR
ELEVATION
NTS

NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.
2. REFER SPECIFICATIONS FOR ALL PANEL COMPONENTS.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT & SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

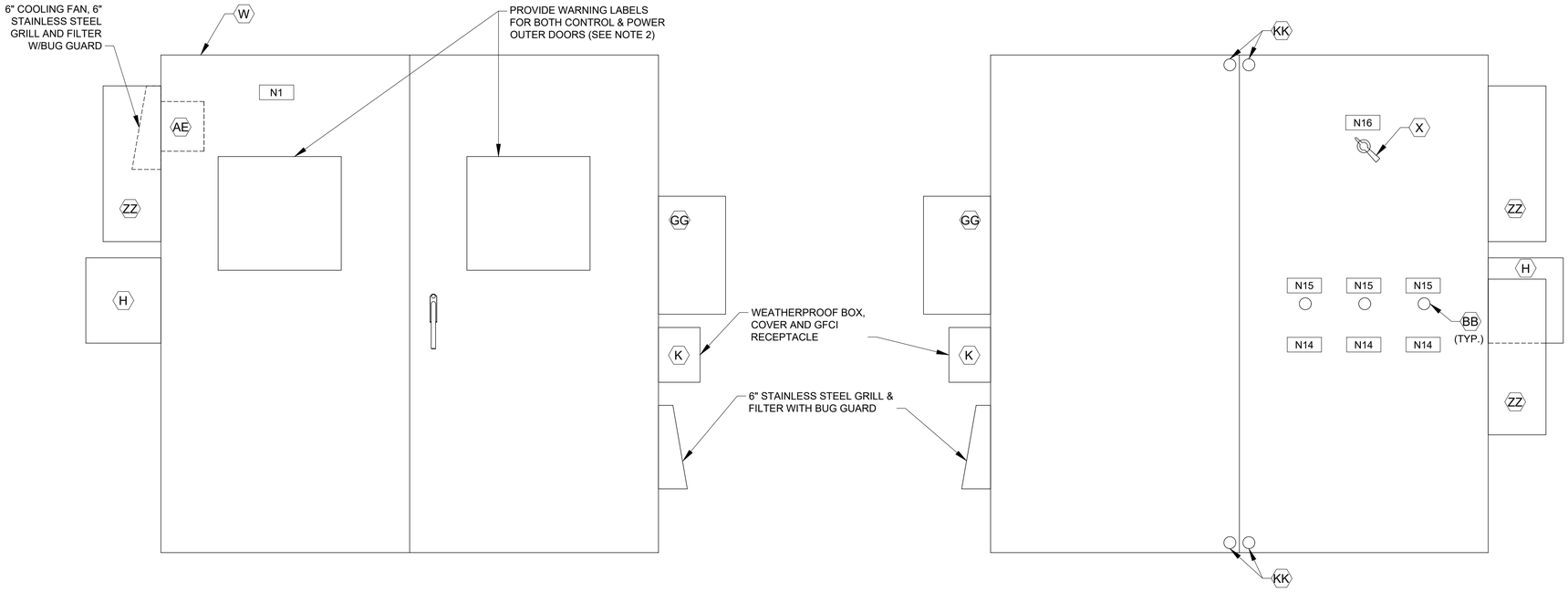
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-404
HORIZ: NONE
VERT: NONE
SHEET NO. 189 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:49 PM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-04.dwg



CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

CONTROL CABINET (POWER SIDE)
INNER DOOR

ELEVATION

NTS

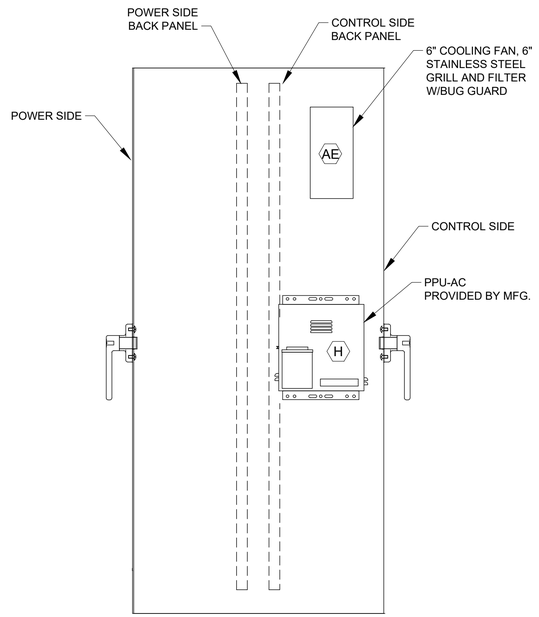
(SEE NOTE 1)

NOTES:

1. SEE SHEET I-404 FOR EQUIPMENT SCHEDULE.
2. REFER TO NEC SECTIONS 110.16 & 110.21

NAMEPLATE SCHEDULE

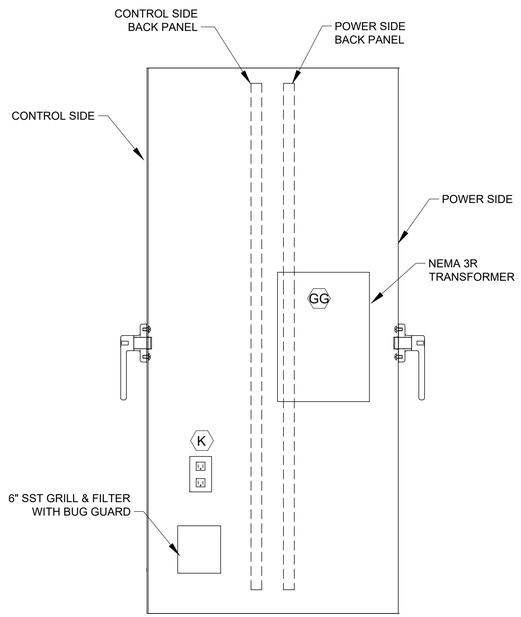
DESIGNATION	ENGRAVED	DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION	N8	NOT USED.
N2	PUMP NO. 1	N9	NOT USED.
N3	PUMP NO. 2	N10	PROGRAMMING SCREEN
N4	PUMP NO. 3	N11	NOT USED.
N5	NOT USED.	N12	PRIMARY PLC
N6	NOT USED.	N13	BACKUP PLC
N7	NOT USED.	N14	MOTOR DATA
			HORSEPOWER (OUTPUT) ----------
			RPM AT FULL LOAD ----------
			TIME RATING ----------
			FREQUENCY ----------
			NUMBER OF PHASES ----------
			MODEL NUMBER ----------
			RATED VOLTAGE ----------
			SERVICE FACTOR ----------
			FULL LOAD AMPS ----------
			INSULATION CLAS ----------
			NEMA DESIGN LETTER ----------
			TEMPERATURE RISE ----------
			NEMA FRAME SIZE ----------
			DATE OF MANUFACTURE ----------
			THERMO PROTECTION (IF REQUIRED) --
			MOISTURE PROTECTION (IF REQUIRED)-
		N15	EXTERNAL OVERLOAD RESET PUSH BUTTON MECHANISM
		N16	MAIN BREAKER



CONTROL CABINET (LEFT SIDE VIEW)

ELEVATION

NTS



CONTROL CABINET (RIGHT SIDE VIEW)

ELEVATION

NTS

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

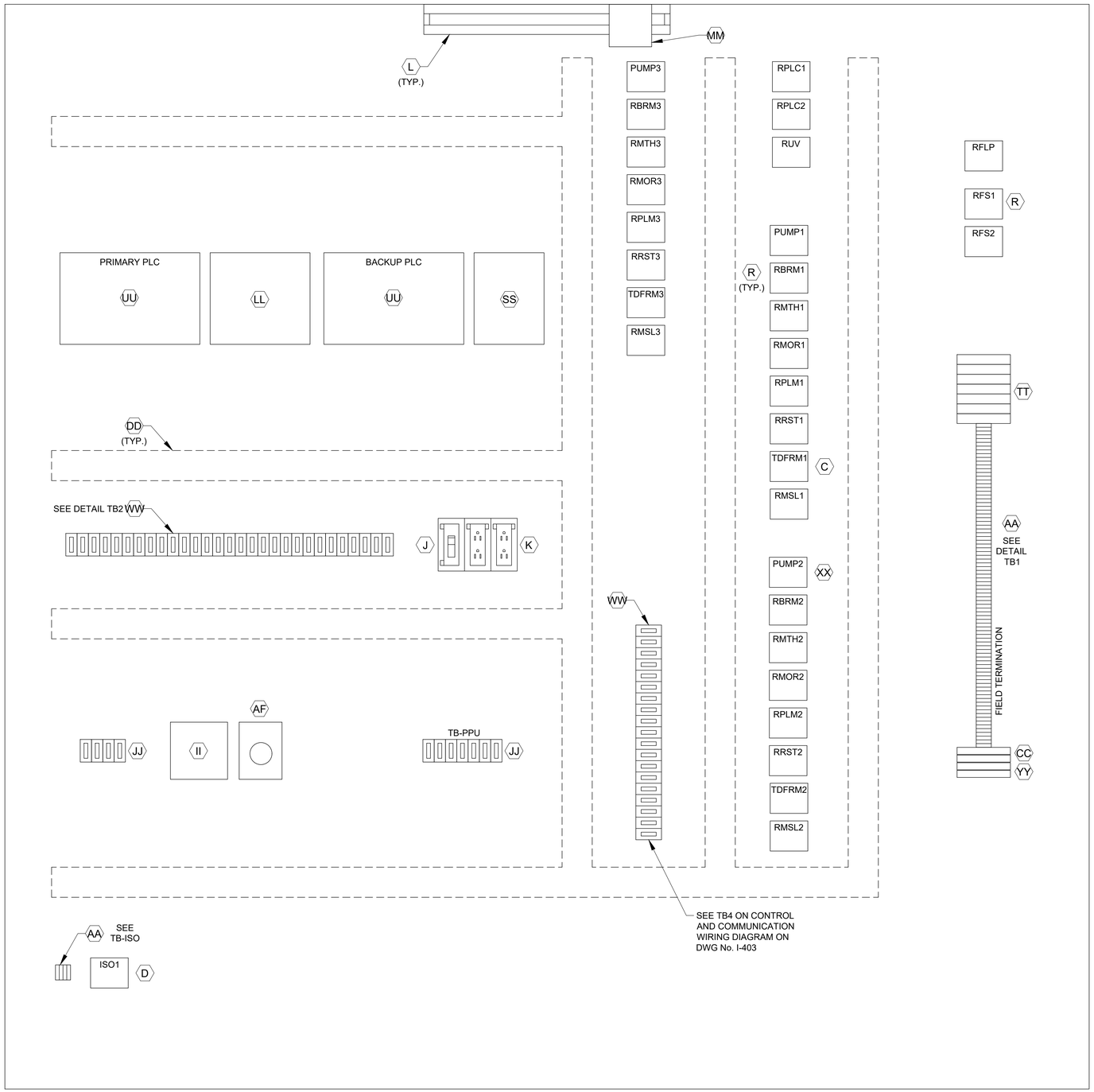
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-405	HORIZ: NONE VERT: NONE
SHEET NO. 190 OF 225	DRAWING SCALE

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CONTROL PANEL
ELEVATION

L1A
L1N
SPARE
3
3N
49
50
51
52
53
54
1004
1
24V-
24V-
1002
2
11
1001
1001A
12
1003
1003A
1002
1004
18
3N
19
20
36
36N
41
42
43
44
SPARE
L1A
L1N
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
219

DETAIL TB1

ALL L AND N FOR EACH PUMP CONTROL TO BE FUSED

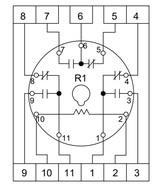
303
304
305
306
307
308
310
313
315
316
319
36A
37A
50
52
54
52A
54A
L+
M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
28
29
32
35B
33
42
44
SPARE
103
104
115
109
110
118
120
121
122
123
SPARE
209
210
211
218
220
222
223

DETAIL TB2

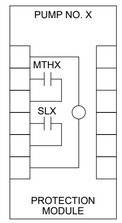
1500
1501
1503
1504

DETAIL TB-ISO

LEGEND	
TAG	DESCRIPTION
RMTH	MOTOR HIGH TEMPERATURE ALARM RELAY
RPLM	PLC PUMP RUN RELAY
RRST	PUMP RESET AUX RELAY
RPLC	PLC MODE AUX RELAY
RMOR	MOTOR OVERLOAD ALARM RELAY
RBRM	BACKUP SYSTEM RUN RELAY
RUV	UNDER VOLTAGE RELAY
ISO	INTRINSICALLY SAFE RELAY
RFS	PUMP RUN FLOAT SWITCH RELAY
TDFRM	TIMER FLOAT SWITCH RUN RELAY
RMSL	MOTOR SEAL LEAK ALARM RELAY
RFLP	FLOAT LOCKOUT PUMP RELAY



RELAY DETAIL
ITEM R



PUMP PROTECTION MODULE
DETAIL, ITEM XX

NOTE: REPLACE "X" WITH
APPROPRIATE PUMP NO.

NOTES:

1. SEE SHEET I-404 FOR EQUIPMENT SCHEDULE.

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

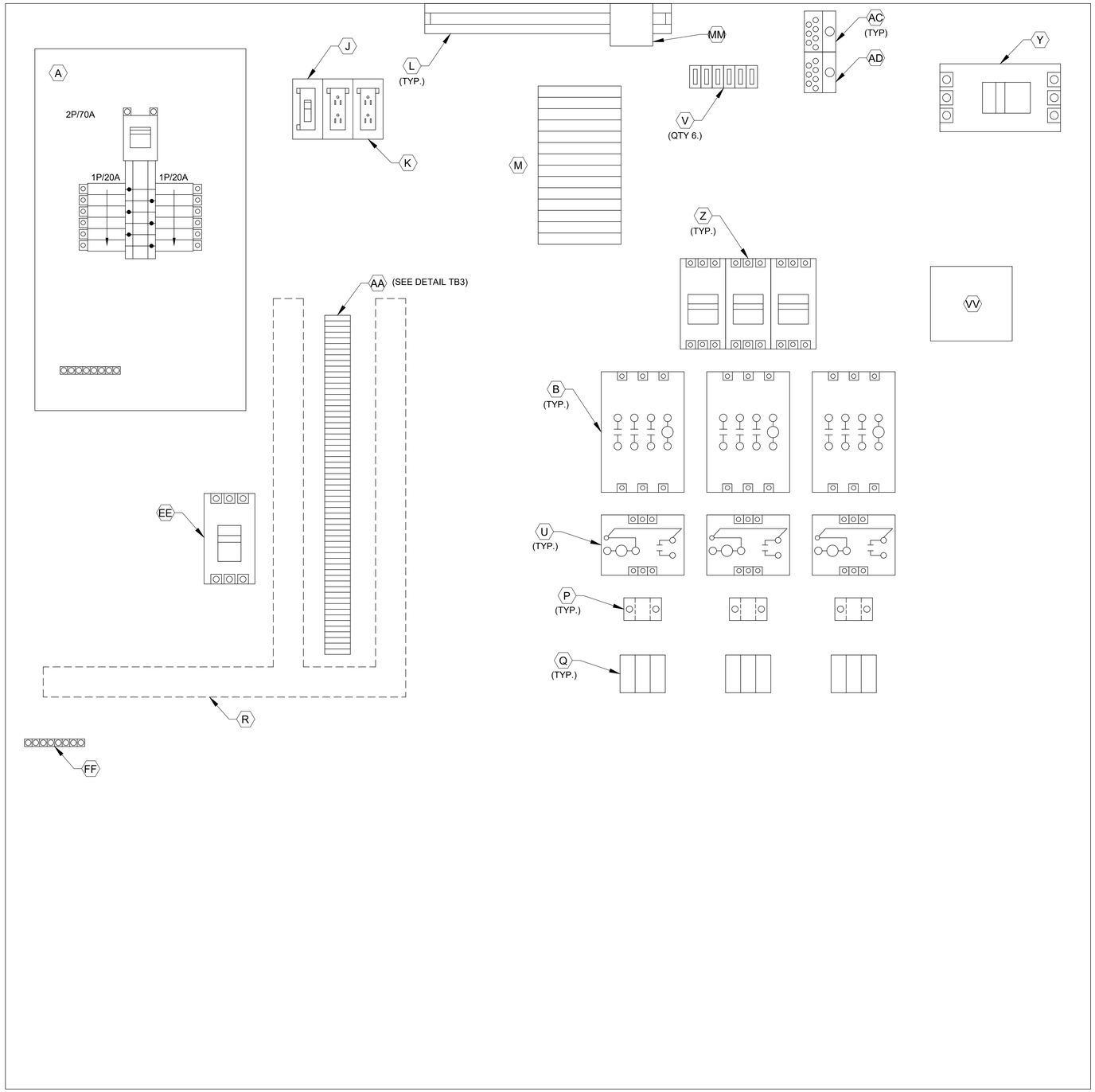
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-406	HORIZ: NONE VERT: NONE
SHEET NO. 191 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb
PLOTTED: 7/23/2025 1:49 PM
FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-06.dwg



POWER PANEL
ELEVATION

3
18
L1A
L1N
SPARE
SPARE
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
216
219
SPARE
303
304
305
306
307
308
310
313
315
316
316
319
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE

DETAIL TB3

NOTES:

1. SEE SHEET I-404 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:49 PM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

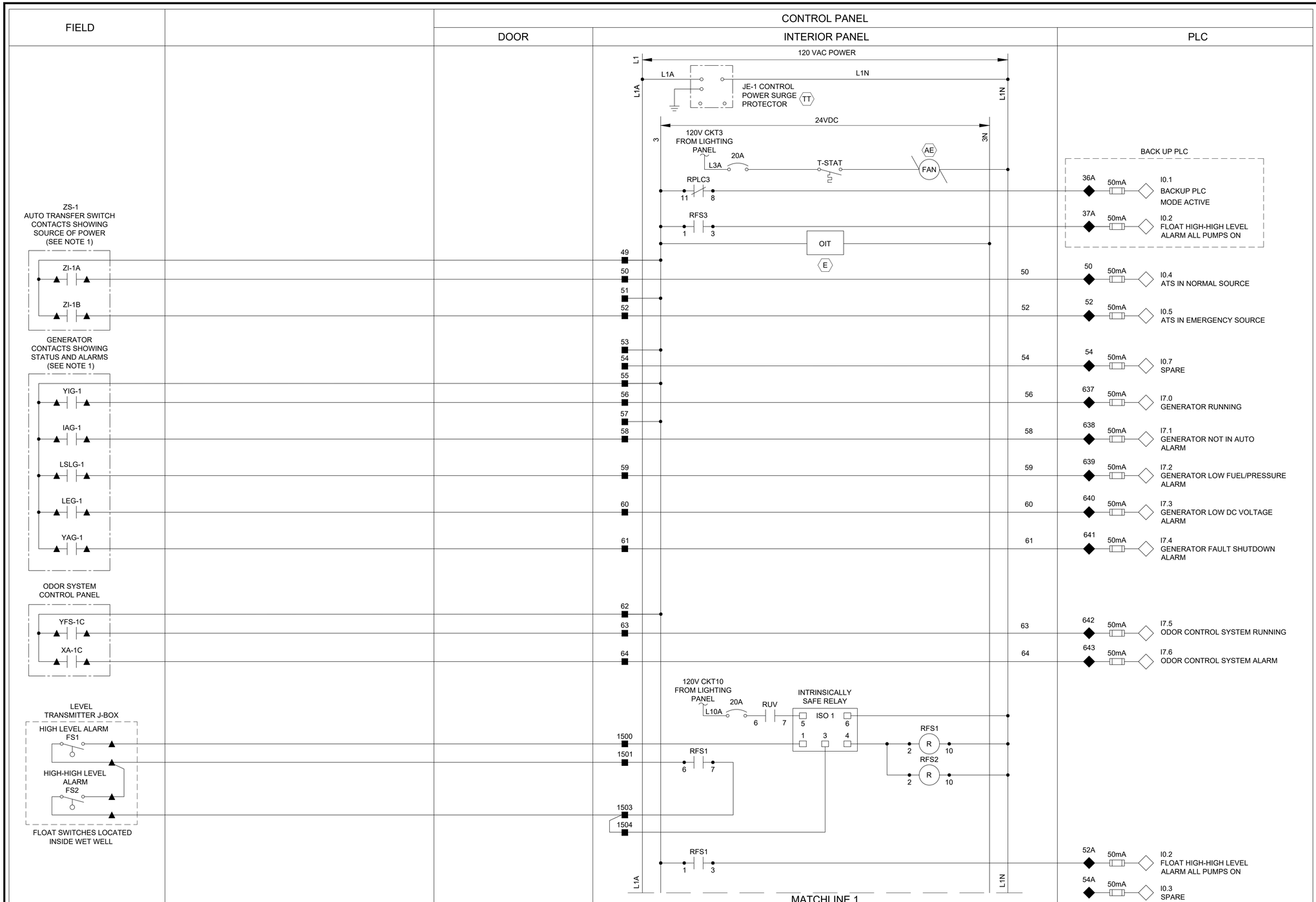
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-407	HORIZ: NONE VERT: NONE
SHEET NO. 192 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-07.dwg



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. PROVIDE MANUAL TRANSFER SWITCH DRY CONTACT.
2. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

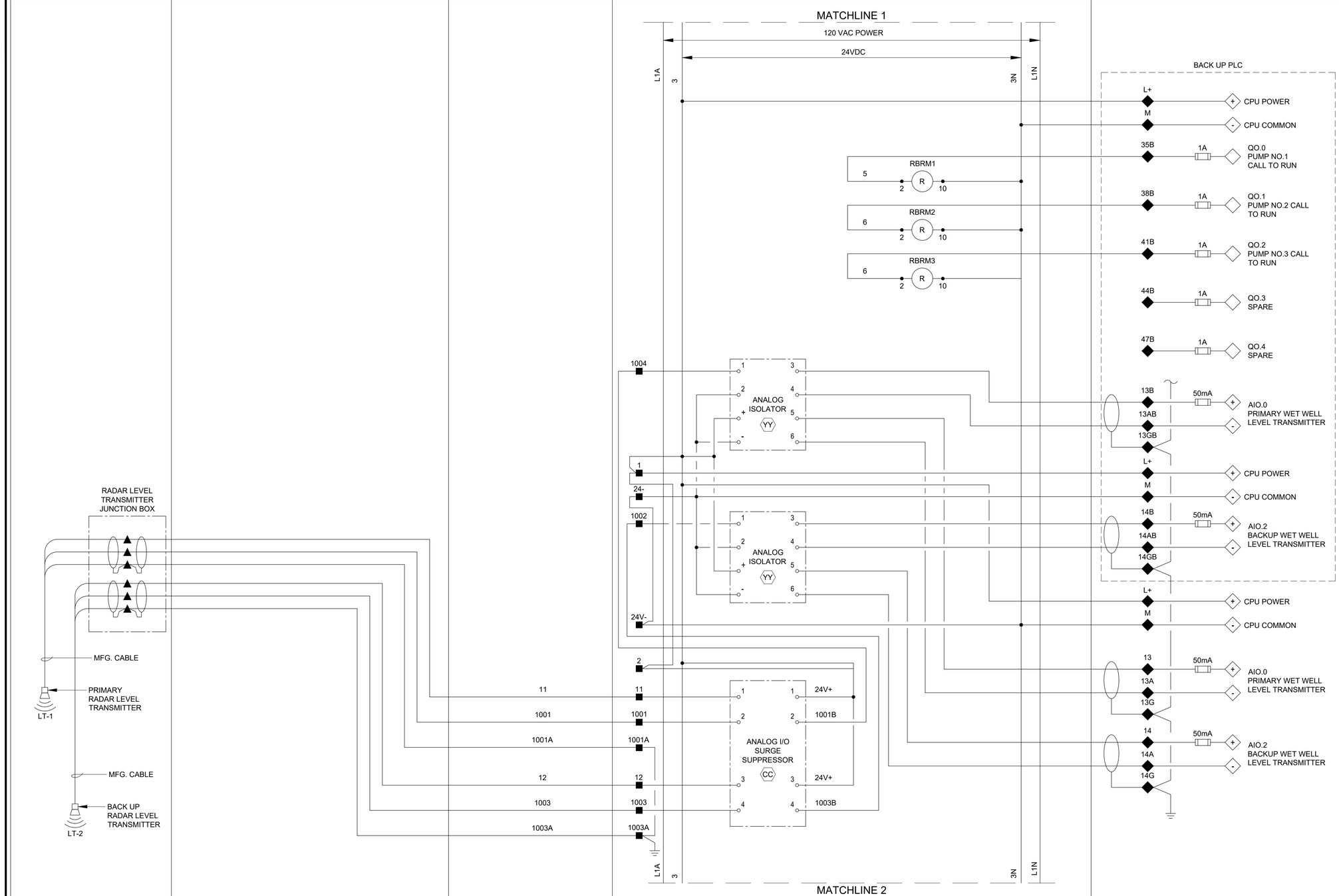
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-408	HORIZ: NONE VERT: NONE
SHEET NO. 193 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-08.dwg

FIELD		CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

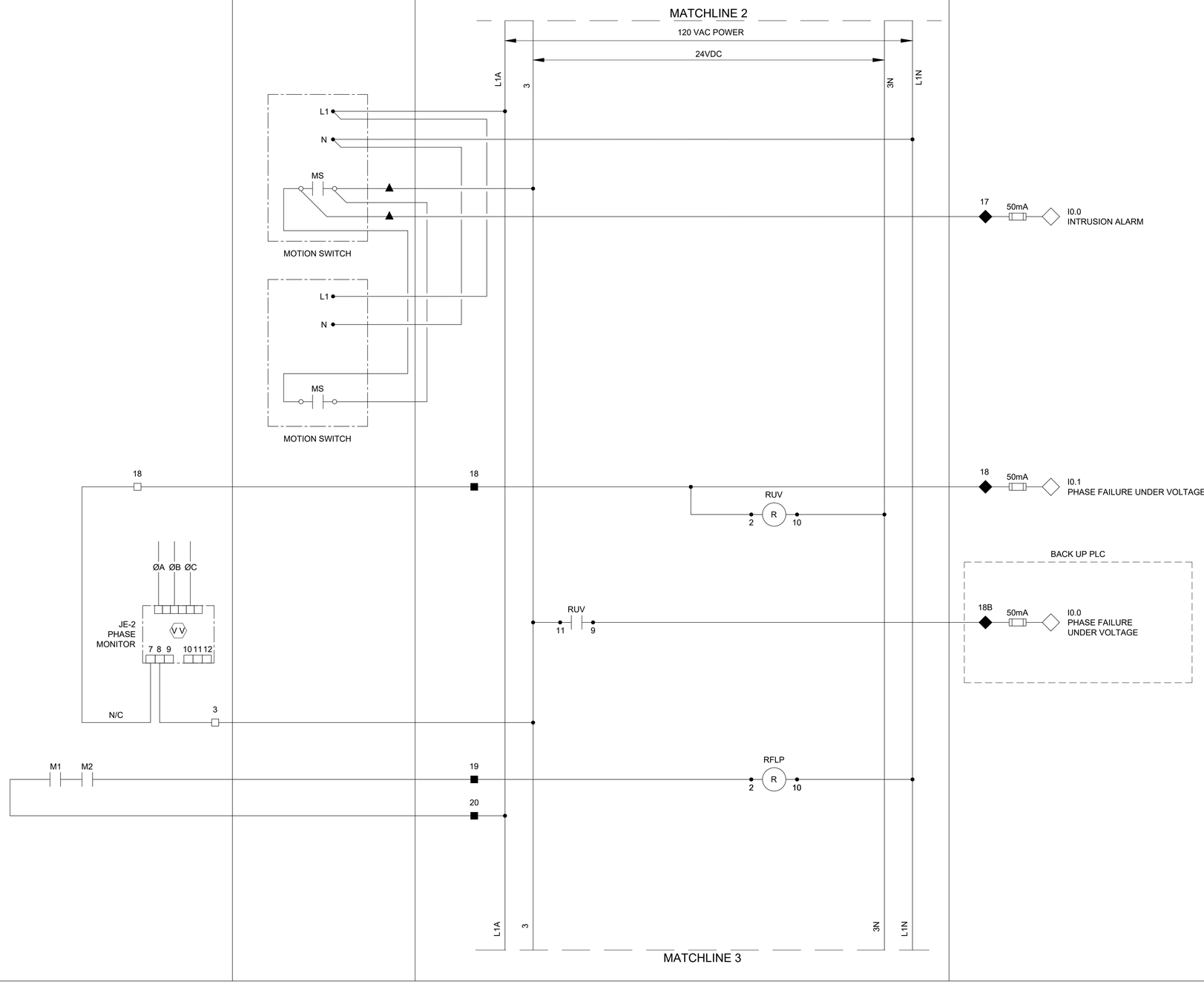
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-409	HORIZ: NONE VERT: NONE
SHEET NO. 194 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-09.dwg

FIELD	POWER PANEL	CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC



NOTES:

1. PROVIDE ONE LIMIT SWITCH PER EXTERIOR CONTROL PANEL AND POWER PANEL DOOR, WIRED IN PARALLEL.

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

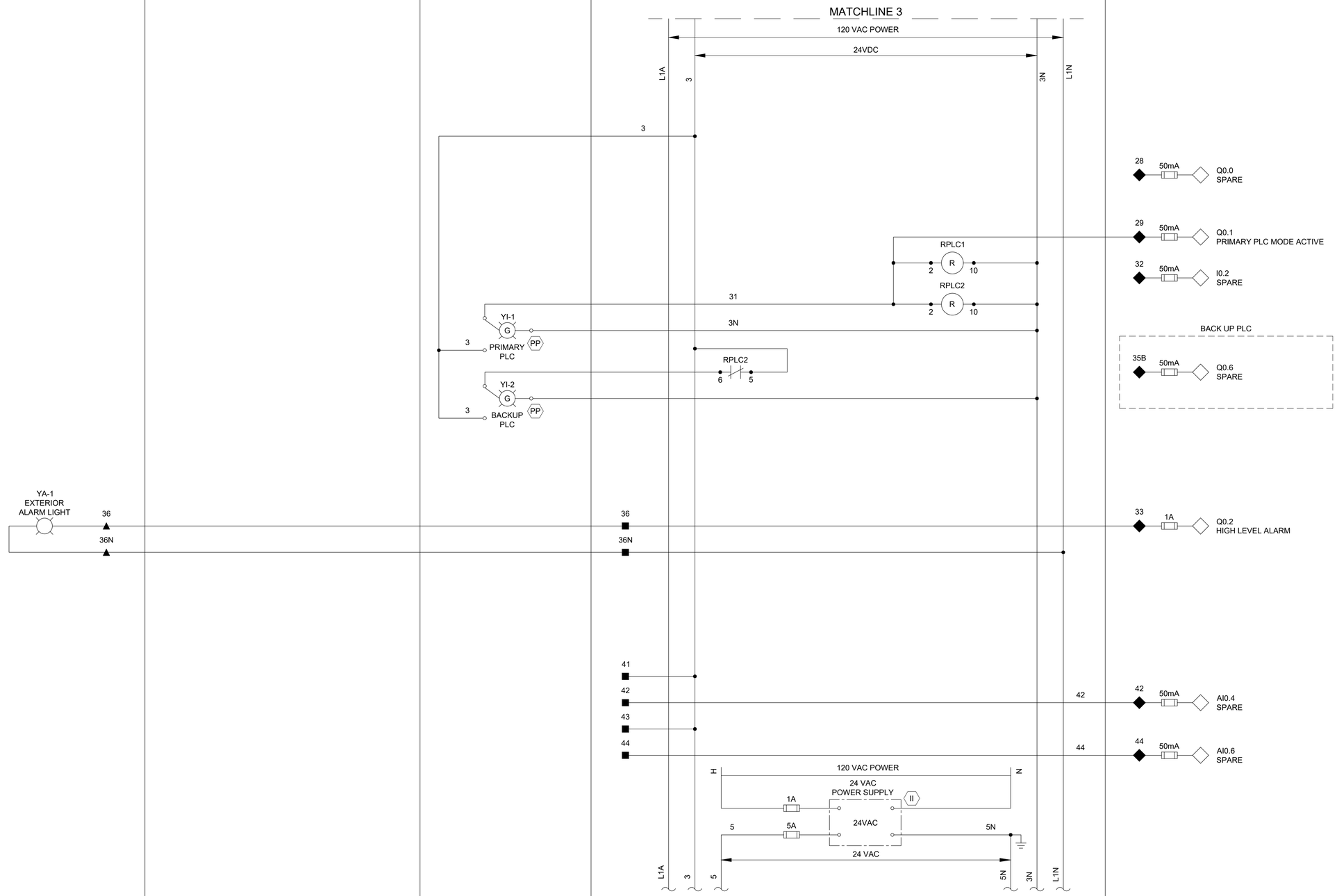
DRAWING NO.	
I-410	HORIZ: NONE VERT: NONE
SHEET NO. 195 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb
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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-10.dwg

FIELD	POWER PANEL	CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-IV

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

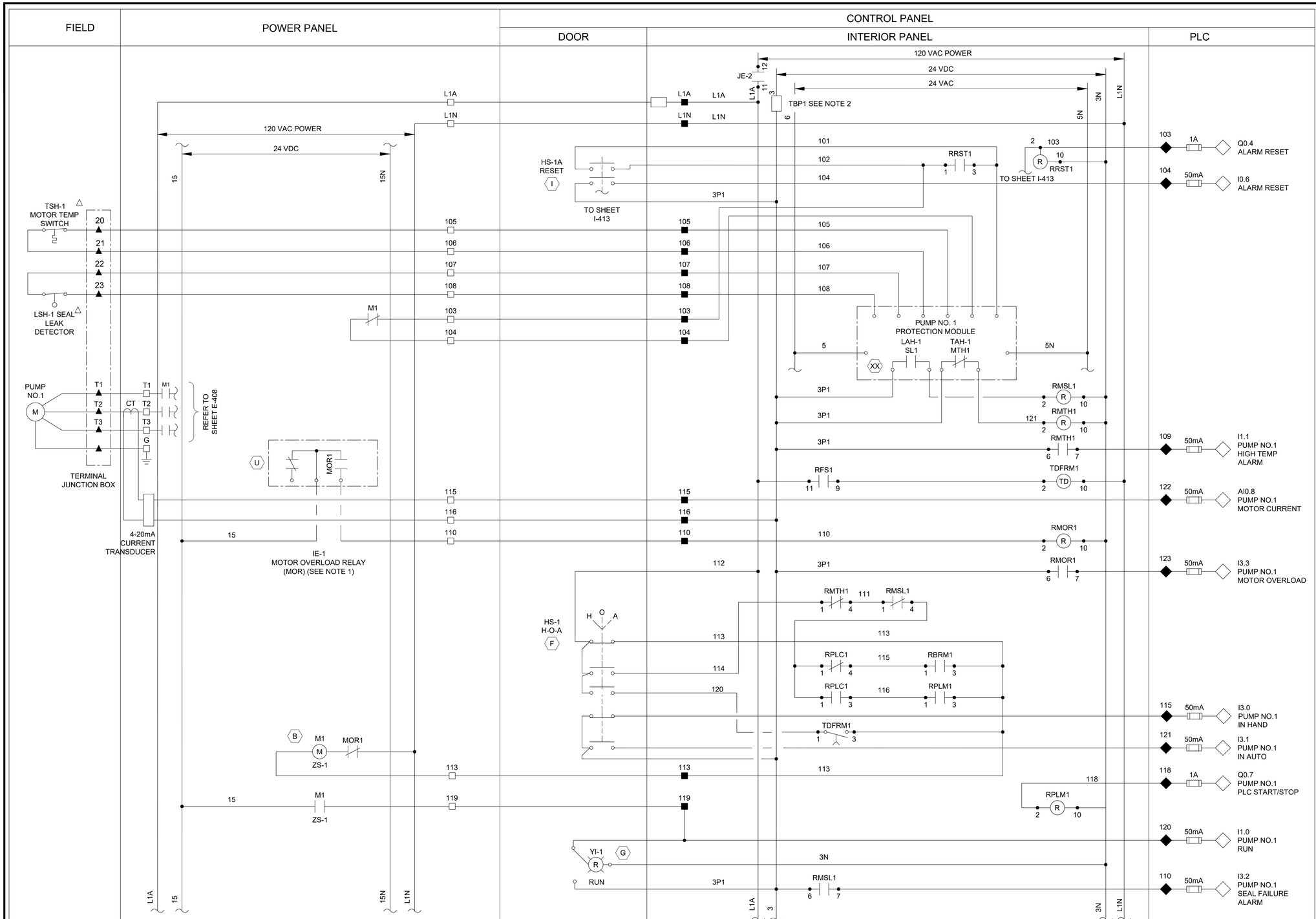
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-411	HORIZ: NONE VERT: NONE
SHEET NO. 196 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-11.dwg



NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-403.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
PUMP NO.1
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

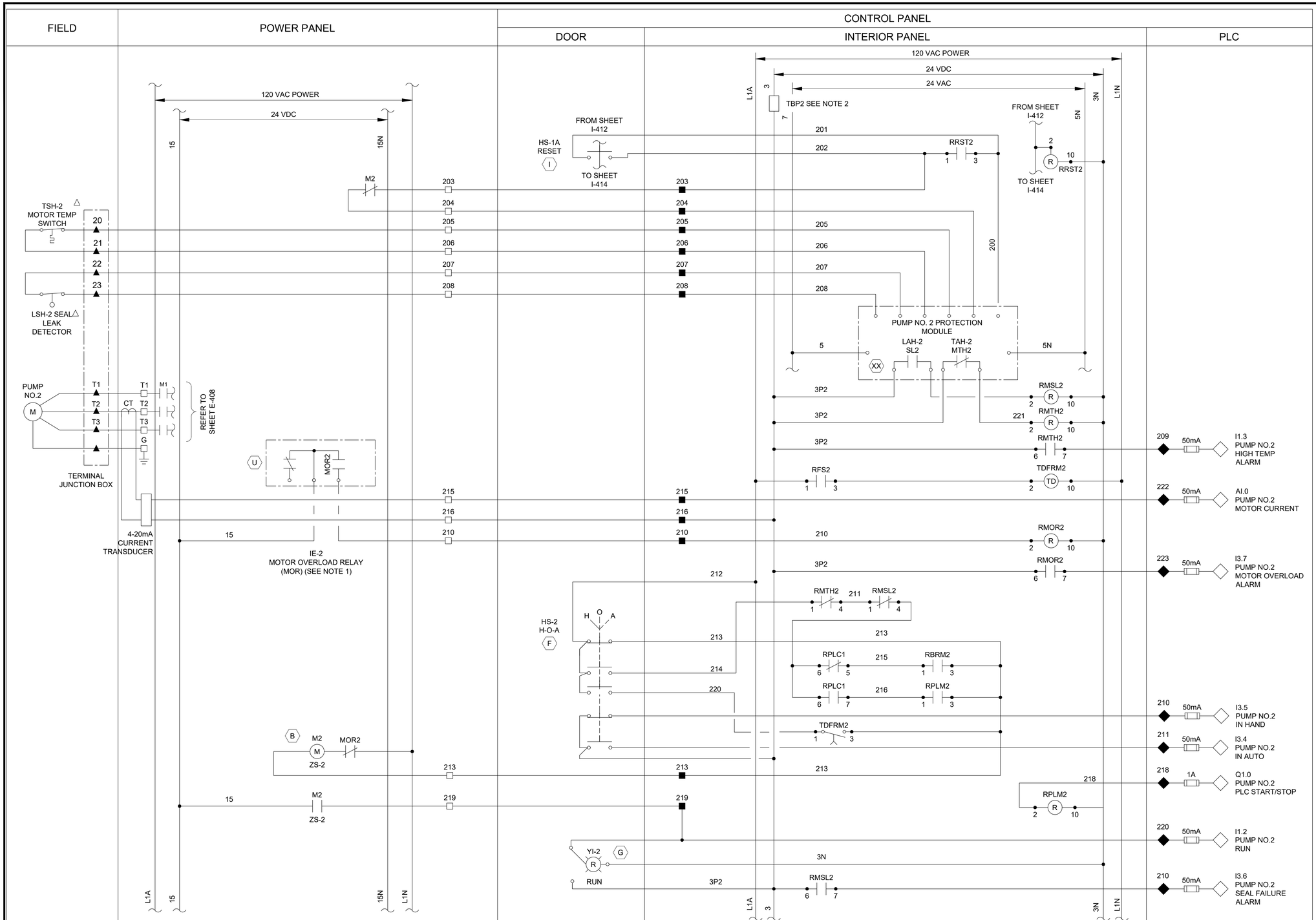
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-412	HORIZ: NONE VERT: NONE
SHEET NO. 197 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-12.dwg



NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-403.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
PUMP NO.2
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-413	HORIZ: NONE VERT: NONE
SHEET NO. 198 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb
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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Pine Prairie\Pine Prairie_I-13.dwg

FIELD | POWER PANEL | CONTROL PANEL — DOOR | CONTROL PANEL — INTERIOR PANEL | PLC

120 VAC POWER
24 VDC
24 VAC
L1A
3
9
TBP3 SEE NOTE 2
3N
5N
L1N
15
15N
M3
HS-1A RESET
FROM SHEET I-413
FROM SHEET I-413
RRST3
TSH-3 MOTOR TEMP SWITCH
LSH-3 SEAL LEAK DETECTOR
PUMP NO.3
TERMINAL JUNCTION BOX
REFER TO SHEET E-408
MOR3
4-20mA CURRENT TRANSDUCER
IE-3 MOTOR OVERLOAD RELAY (MOR) (SEE NOTE 1)
PUMP NO. 3 PROTECTION MODULE
LAH-3 SL3
TAH-3 MTH3
RMSL3
RMTH3
RFS2
TDFRM3
RMOR3
RPLC2
RBRM3
RPLM3
RFLP
HS-3 H-O-A
ZS-3
YI-3
RUN

309	50mA	I1.5 PUMP NO. 3 HIGH TEMPERATURE ALARM
322	50mA	AI1.2 PUMP NO. 3 MOTOR CURRENT
323	50mA	I4.3 PUMP NO. 3 MOTOR OVERLOAD ALARM
316	50mA	I4.1 PUMP NO.3 IN HAND
317	50mA	I4.0 PUMP NO.3 IN AUTO
318	1A	Q1.1 PUMP NO.3 PLC START/STOP
320	50mA	I1.4 PUMP NO. 3 RUN
310	50mA	I4.2 PUMP NO. 3 SEAL FAILURE

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM. DRAWING NO. I-403.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

PINE PRAIRIE
LIFT STATION
PUMP NO.3
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-414
HORIZ: NONE
VERT: NONE
SHEET NO. 199 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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HMI

INFLUENT PUMP NO. 1: SEAL FAIL ALARM MA 1 | MOTOR OVERLOAD ALARM MO 1 | MOTOR CURRENT II 1 | HIGH TEMP ALARM TH 1 | IN HAND HI 1 | IN AUTO IA 1 | ON/OFF YFS 1 | START/STOP YCS 1

INFLUENT PUMP NO. 2: SEAL FAIL ALARM MA 2 | MOTOR OVERLOAD ALARM MO 2 | MOTOR CURRENT II 2 | HIGH TEMP ALARM TH 2 | IN HAND HI 2 | IN AUTO IA 2 | ON/OFF YFS 2 | START/STOP YCS 2

INFLUENT PUMP NO. 3: SEAL FAIL ALARM MA 3 | MOTOR OVERLOAD ALARM MO 3 | MOTOR CURRENT II 3 | HIGH TEMP ALARM TH 3 | IN HAND HI 3 | IN AUTO IA 3 | ON/OFF YFS 3 | START/STOP YCS 3

PRIMARY PLC: ALARMS RESET RE 1 | FLOAT HIGH-HIGH WETWELL LEVEL LAHH 1A

BACKUP PLC: PUMP NO. 1 START/STOP YCS 1A | PUMP NO. 2 START/STOP YCS 2A | PUMP NO. 3 START/STOP YCS 3A

CONTROL PANEL PLC

CONTROL PANEL

480V

INFLUENT PUMP NO. 1 H/O/A | RUN

INFLUENT PUMP NO. 2 H/O/A | RUN

INFLUENT PUMP NO. 3 H/O/A | RUN

PRIMARY PLC (G)

BACKUP PLC (G)

INFLUENT PUMP CONTROL PANEL

ALARMS RESET

OIT

TO SHEET I-502

I-502

I-502

WET WELL

LT 1

LE 1

LT 2

LE 2

LSH 1A

TSH 1A

M

FS2 HIGH-HIGH LEVEL FLOAT SWITCH

LSH 2A

TSH 2A

M

LSH 3A

TSH 3A

M

FS1 HIGH LEVEL FLOAT SWITCH

INFLUENT DISCHARGE

NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS LIFT STATION PROCESS & INSTRUMENTATION DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
STORM WATER | TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-501

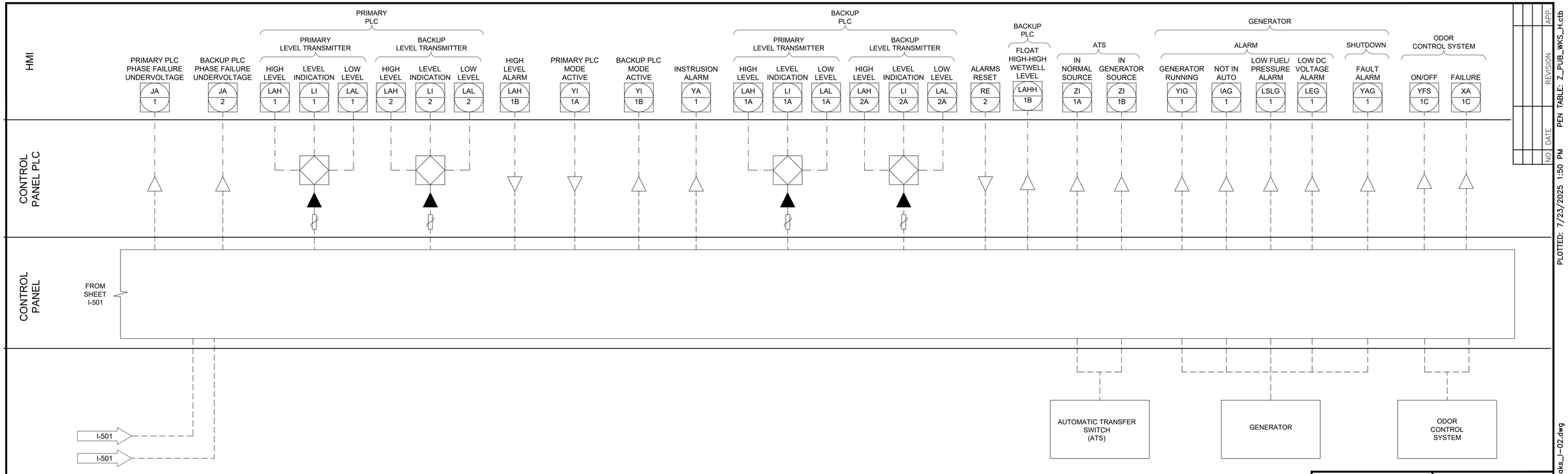
HORIZ: NONE
VERT: NONE

SHEET NO. 200 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I_01.dwg



NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

ELECTRICAL

STATELY OAKS
LIFT STATION
PROCESS & INSTRUMENTATION DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-502

HORIZ: NONE
VERT: NONE

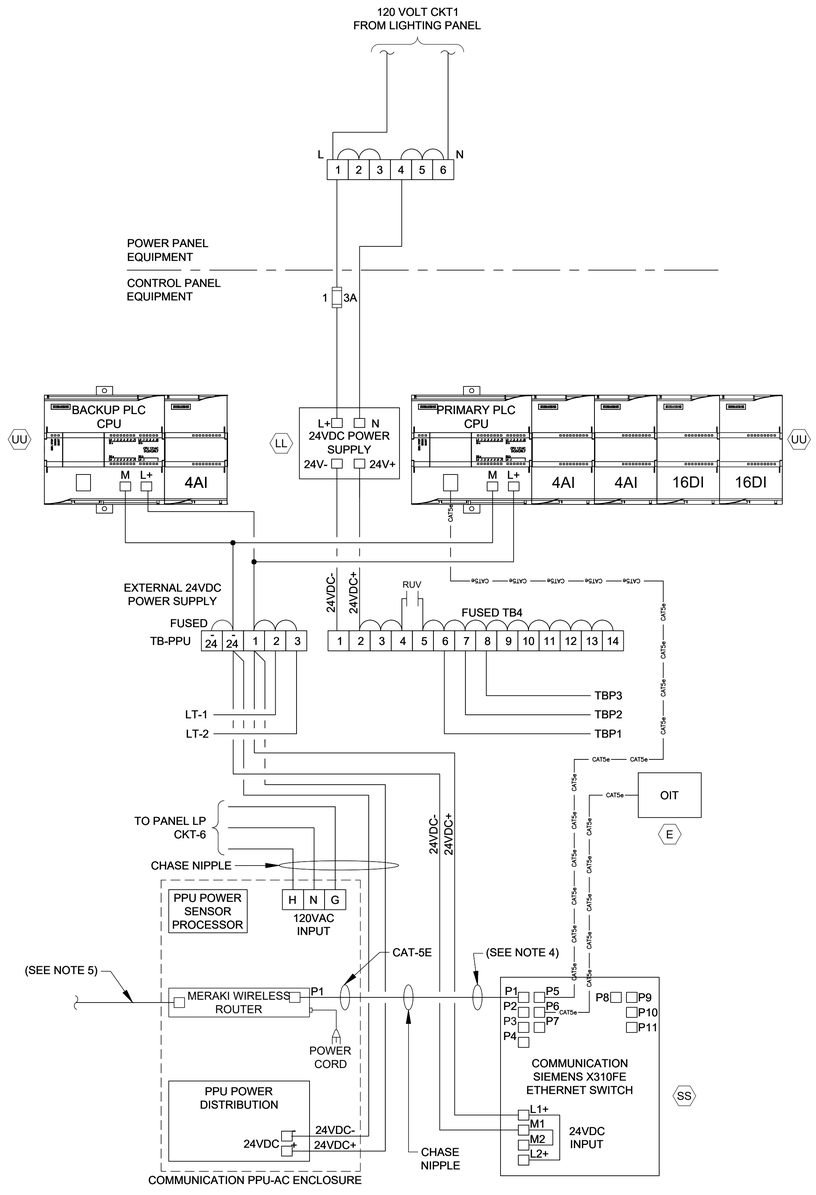
SHEET NO. 201 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

NOTES:

1. FOR DESCRIPTION AND RATINGS OF ITEMS INDICATED WITH ITEM TAG, SEE DEVICE RATINGS SCHEDULE.
2. REFER TO SPEC SECTION 16120 FOR CONDUCTOR COLOR CODE.
3. THE PLC POWER SUPPLY SHALL FEED THE 24VDC I/O.
4. ETHERNET CABLE FOR MERAKI CELLULAR ROUTER (P1).
5. POE CABLE TO RADIO.
6. COMMUNICATION PPU-AC & SCADA SHALL BE PROVIDED BY CONTRACTOR INCLUDING TO RUN CONDUITS & WIRES.
7. COORDINATE WITH VENDOR TO PROVIDE PROPER VENTILATION WHERE APPLICABLE.

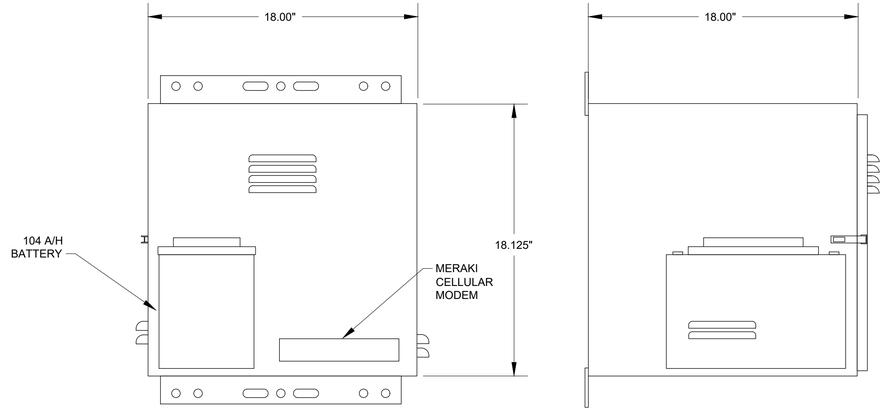


CONTROL POWER & COMMUNICATIONS WIRING

DIAGRAM

NTS

(SEE NOTE 2 & 6)



PPU-AC CONTROL ENCLOSURE

ELEVATION

NTS

(SEE NOTE 7)

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
COMMUNICATIONS DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-503

HORIZ: NONE

VERT: NONE

SHEET NO. 202 OF 225

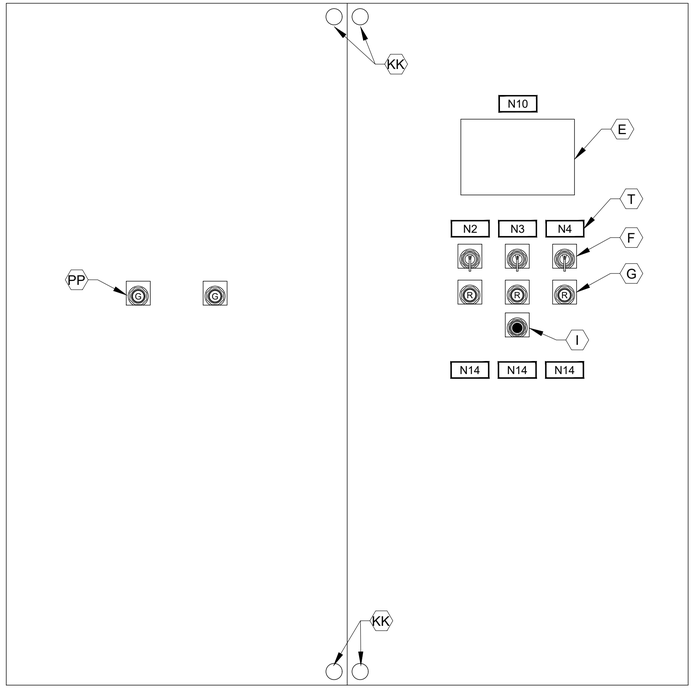
DRAWING SCALE

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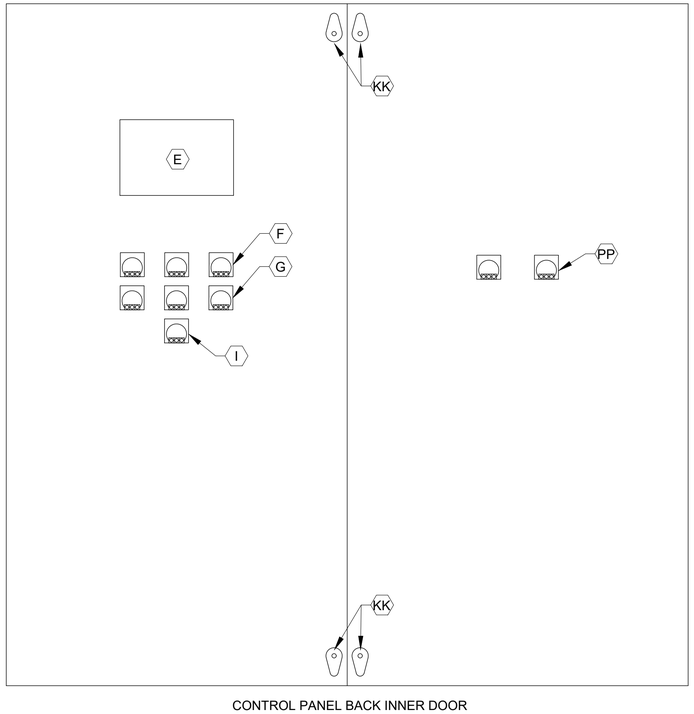
EQUIPMENT AND DEVICE SCHEDULE

ITEM	QUANTITY	DESCRIPTION
A	1	PANEL BOARD, 120/240V, 1 PHASE, 3 WIRE, 100A, 12 CKTS
B	2	FULL VOLTAGE, NON-REVERSING, SINGLE SPEED, AUTOMATIC MOTOR STARTER W/120 VOLT CONTROL COIL, NEMA SIZE AS SCHEDULED.
C	2	TIME DELAY RELAY WITH THREE FORM C CONTACTS, 120VAC COIL AND 11 PIN SOCKET BASE.
D	1	SINGLE CHANNEL INTRINSICALLY SAFE RELAY
E	1	PROGRAMMING SCREEN (OIT)
F	3	HAND-OFF-AUTO SWITCH, 3 POSITION, HEAVY-DUTY, OILTIGHT WITH 2 SETS OF CONTACT BLOCKS (PUMP CONTROL)
G	3	INDICATING LIGHT, HEAVY DUTY, OILTIGHT, RED, 24 VDC, LED, WITH "RUN" LEGEND
H	1	PERPETUAL POWER UNIT (PPU)
I	1	PUMP ALARM RESET PUSHBUTTON
J	2	SWITCH FOR CABINET LIGHT, 120V, 20A, SPST
K	3	DUPLEX RECEPTACLE, 120V, 20A, 2 WIRE, GROUNDED
L	2	24" LED STRIP LIGHT 120V SUITABLE FOR ZERO DEGREE OPERATION.
M	1	SURGE PROTECTOR - INCOMING POWER
N	*	NOT USED.
P	2	CURRENT TRANSFORMER, RATIO AS SCHEDULED W/4-20mA OUTPUT.
Q	12	TERMINAL BLOCKS, SIZED FOR MOTOR POWER REQUIREMENTS
R	*	RELAY WITH THREE FORM C CONTACTS, AND 11 PIN SOCKET BASE
S	*	NOT USED.
T	*	NAMEPLATES, SEE SPECIFICATIONS (SEE NAMEPLATE SCHEDULE)
U	2	SOLID STATE MOTOR OVERLOAD RELAY
V	6	FUSE HOLDER & FUSES - PHASE FAILURE
W	1	NEMA 3R GASKETED ALUMINUM ENCLOSURE WITHOUT VENTS 72"H x 60"w x 36"D
X	1	DOOR MOUNTED ROTARY HANDLE DISCONNECT SWITCH (SUITABLE FOR ENVIRONMENT)
Y	1	THERMAL-MAGNETIC MOLDED CASE MAIN CIRCUIT BREAKER, SIZE AS SCHEDULED
Z	2	ADJUSTABLE INSTANTENOUS TRIP MOTOR CIRCUIT PROTECTOR, SIZE AS SCHEDULED
AA	*	TERMINAL BLOCKS
BB	2	EXTERNAL OVERLOAD RESET PUSHBUTTON MECHANISM
CC	2	ANALOG I/O SURGE SUPPRESSOR
DD	1	WIRE DUCT 2" WIDE x 2" DEEP MINIMUM
EE	1	THERMAL-MAGNETIC MODLED CASE CIRCUIT BREAKER FOR LIGHTING TRANSFORMER, SIZE AS SCHEDULED
FF	1	GROUND BUS
GG	1	25 KVA, 480 - 240/120V,1ϕ, 3W DRY TYPE NEMA 3R ENCLOSURE TRANSFORMER (PAD MOUNTED)
HH	*	NOT USED.
II	1	120VAC - 24VAC POWER SUPPLY (AS REQUIRED)
JJ	11	CARTRIDGE FUSES & FUSE HOLDER
KK	8	QUARTER TURN CAPTIVE DOOR CLOSURE
LL	1	120VAC - 24VDC PLC POWER SUPPLY 5A
MM	2	MOTION SWITCH
NN	*	NOT USED
PP	2	INDICATING LED LIGHT, HEAVY DUTY, OILTIGHT, GREEN, 24 VDC, LED WITH " PRIMARY PLC" & "BACKUP PLC" LEGEND
QQ	*	NOT USED
RR	*	NOT USED
SS	1	COMMUNICATION ETHERNET SWITCH
TT	1	POWER SURGE PROTECTOR - CONTROL POWER
UU	2	PROGRAMMABLE LOGIC CONTROLLER WITH EXPANSION UNIT
VV	1	PHASE AND UNDER VOLTAGE MONITOR
WW	*	FUSED TERMINAL BLOCKS
XX	2	PUMP PROTECTION MODULE RATED FOR CLASS I, DIVISION I
YY	2	ANALOG SIGNAL ISOLATOR
ZZ	3	POWER FACTOR CORRECTION CAPACITOR NEMA 3R STAINLESS STEEL
AB	-	NOT USED.
AC	1	POWER DISTRIBUTION BLOCK
AD	1	NEUTRAL LUG
AE	1	6" EXHAUST FAN, 120V, STAINLESS FILTERS & GRILL PACKAGE W/BUG GUARD
AF	1	T-STAT FOR EXHAUST FAN

* - AS SCHEDULED



CONTROL PANEL FRONT INNER DOOR
ELEVATION
NTS



CONTROL PANEL BACK INNER DOOR
ELEVATION
NTS

NOTES:

1. NAMEPLATES SHALL BE MOUNTED TO PANELS USING STAINLESS STEEL HARDWARE.
2. REFER SPECIFICATIONS FOR ALL PANEL COMPONENTS.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT & SCHEDULE

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

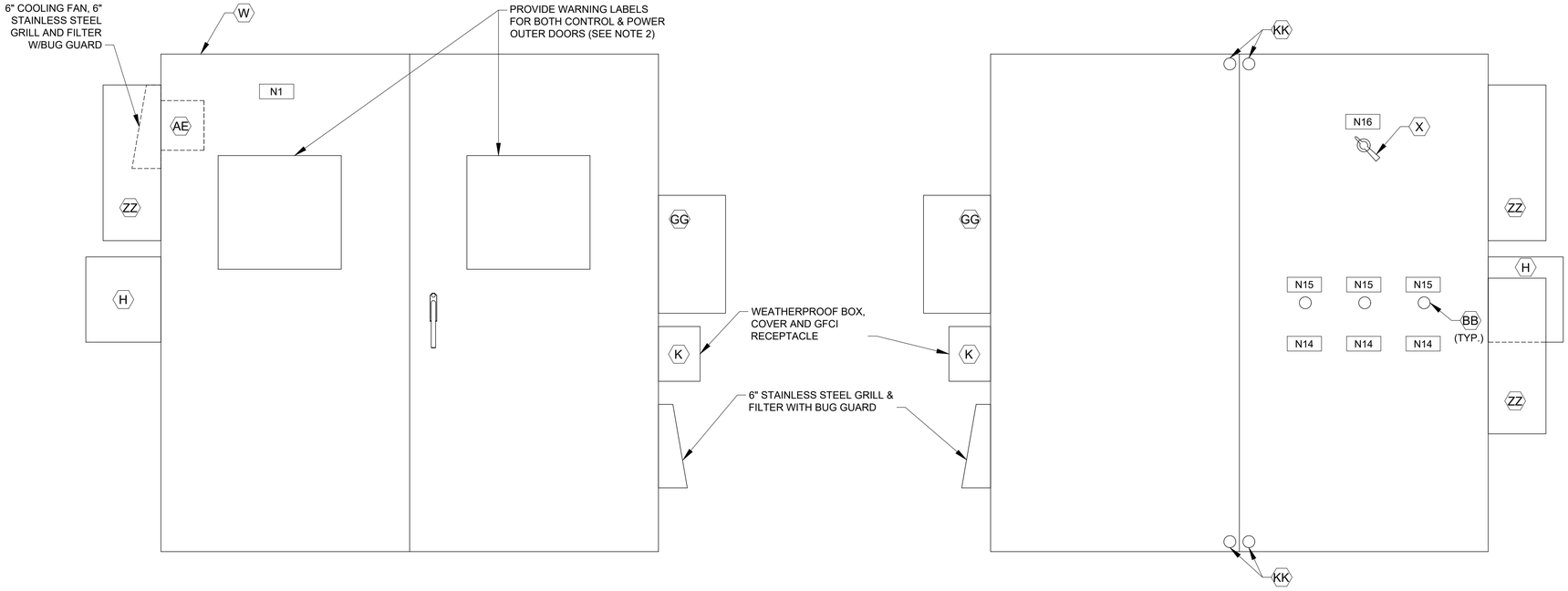
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-504
HORIZ: NONE
VERT: NONE
SHEET NO. 203 OF 225
DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

NO.	DATE	REVISION	APP.

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CONTROL CABINET (CONTROL SIDE)
OUTER DOOR

ELEVATION

NTS

CONTROL CABINET (POWER SIDE)
INNER DOOR

ELEVATION

NTS

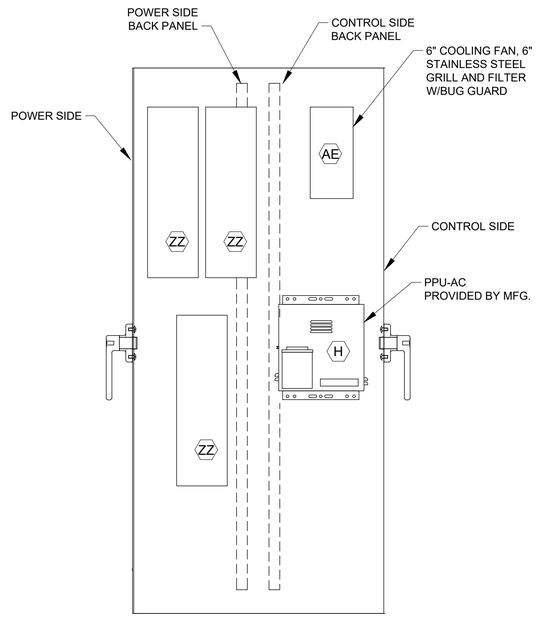
(SEE NOTE 1)

NOTES:

1. SEE SHEET I-504 FOR EQUIPMENT SCHEDULE.
2. REFER TO NEC SECTIONS 110.16 & 110.21

NAMEPLATE SCHEDULE

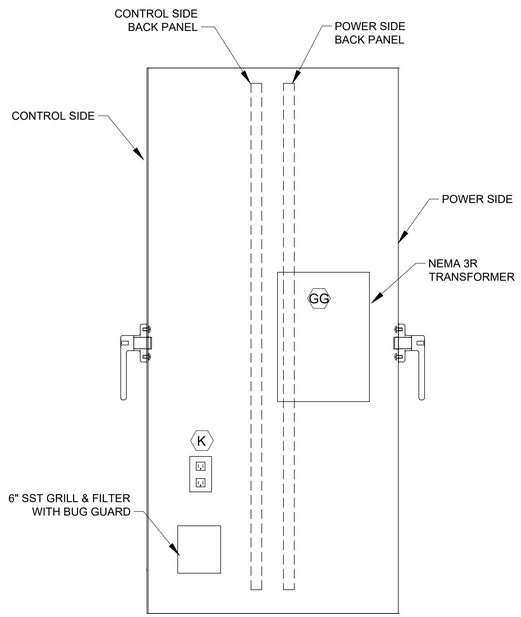
DESIGNATION	ENGRAVED	DESIGNATION	ENGRAVED
N1	PUMP STATION DESIGNATION	N8	NOT USED.
N2	PUMP NO. 1	N9	NOT USED.
N3	PUMP NO. 2	N10	PROGRAMMING SCREEN
N4	PUMP NO. 3	N11	NOT USED.
N5	NOT USED.	N12	PRIMARY PLC
N6	NOT USED.	N13	BACKUP PLC
N7	NOT USED.	N14	MOTOR DATA
			HORSEPOWER (OUTPUT) ----------
			RPM AT FULL LOAD ----------
			TIME RATING ----------
			FREQUENCY ----------
			NUMBER OF PHASES ----------
			MODEL NUMBER ----------
			RATED VOLTAGE ----------
			SERVICE FACTOR ----------
			FULL LOAD AMPS ----------
			INSULATION CLAS ----------
			NEMA DESIGN LETTER ----------
			TEMPERATURE RISE ----------
			NEMA FRAME SIZE ----------
			DATE OF MANUFACTURE ----------
			THERMO PROTECTION (IF REQUIRED) --
			MOISTURE PROTECTION (IF REQUIRED)-
		N15	EXTERNAL OVERLOAD RESET PUSH BUTTON MECHANISM
		N16	MAIN BREAKER



CONTROL CABINET (LEFT SIDE VIEW)

ELEVATION

NTS



CONTROL CABINET (RIGHT SIDE VIEW)

ELEVATION

NTS

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

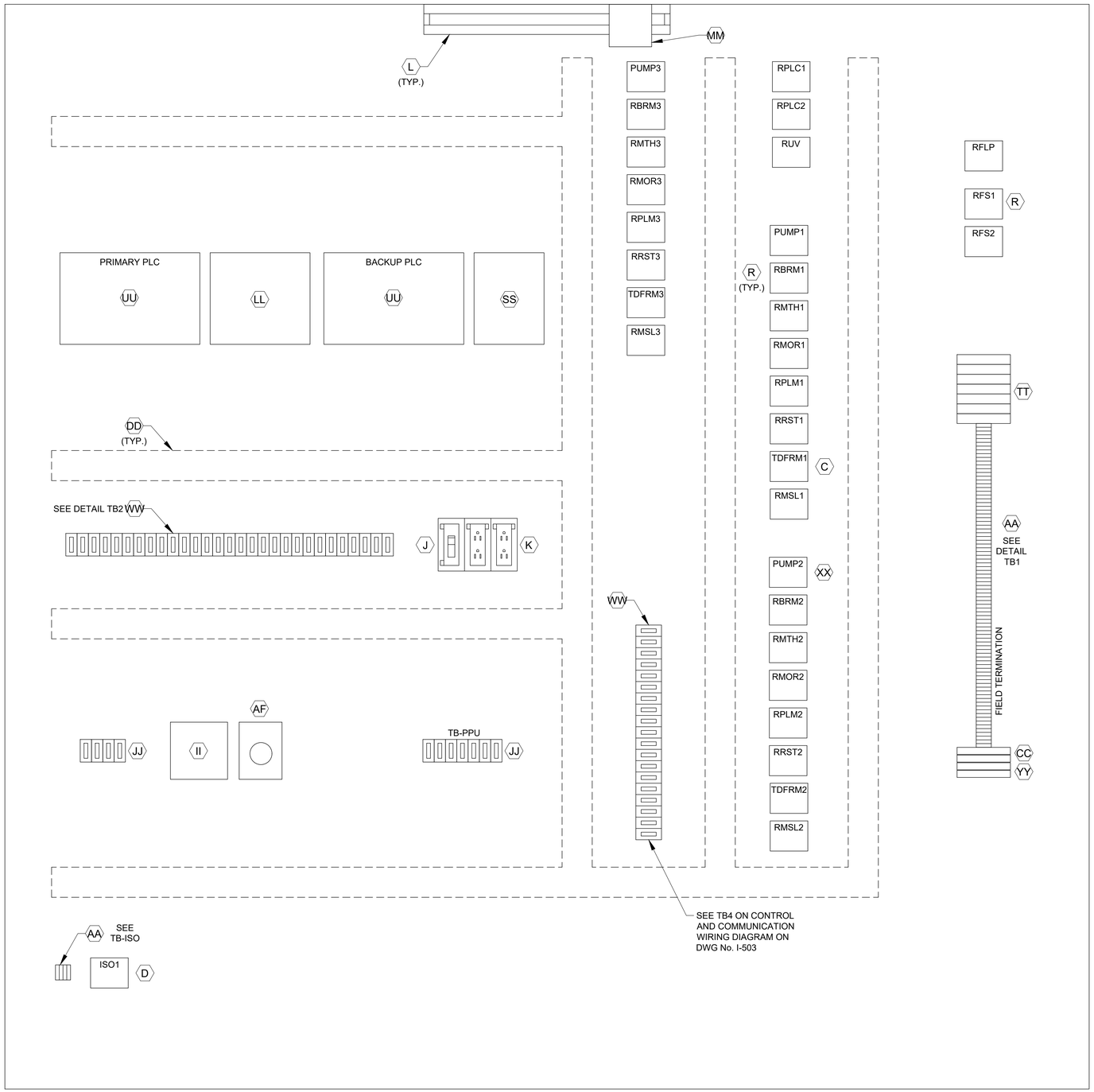
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-505	HORIZ: NONE VERT: NONE
SHEET NO. 204 OF 225	DRAWING SCALE

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CONTROL PANEL
ELEVATION

L1A
L1N
SPARE
3
3N
49
50
51
52
53
54
1004
1
24V-
24V-
1002
2
11
1001
1001A
12
1003
1003A
1002
1004
18
3N
19
20
36
36N
41
42
43
44
SPARE
L1A
L1N
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
219

DETAIL TB1

ALL L AND N FOR EACH PUMP CONTROL TO BE FUSED

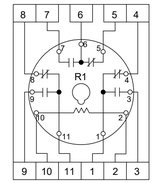
303
304
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316
319
36A
37A
50
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52A
54A
L+
M
35B
38B
41B
47B
13B
13AB
13GB
L+
M
14B
14AB
14GB
L+
M
13
13A
13G
14
14A
14G
SPARE
18
SPARE
28
29
32
35B
33
42
44
SPARE
103
104
115
109
110
118
120
121
122
123
SPARE
209
210
211
218
220
222
223

DETAIL TB2

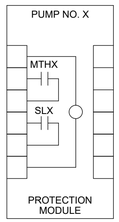
1500
1501
1503
1504

DETAIL TB-ISO

LEGEND	
TAG	DESCRIPTION
RMTH	MOTOR HIGH TEMPERATURE ALARM RELAY
RPLM	PLC PUMP RUN RELAY
RRST	PUMP RESET AUX RELAY
RPLC	PLC MODE AUX RELAY
RMOR	MOTOR OVERLOAD ALARM RELAY
RBRM	BACKUP SYSTEM RUN RELAY
RUV	UNDER VOLTAGE RELAY
ISO	INTRINSICALLY SAFE RELAY
RFS	PUMP RUN FLOAT SWITCH RELAY
TDFRM	TIMER FLOAT SWITCH RUN RELAY
RMSL	MOTOR SEAL LEAK ALARM RELAY
RFLP	FLOAT LOCKOUT PUMP RELAY



RELAY DETAIL
ITEM R



PUMP PROTECTION MODULE
DETAIL, ITEM XX

NOTE: REPLACE "X" WITH
APPROPRIATE PUMP NO.

NOTES:

1. SEE SHEET I-504 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:50 PM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

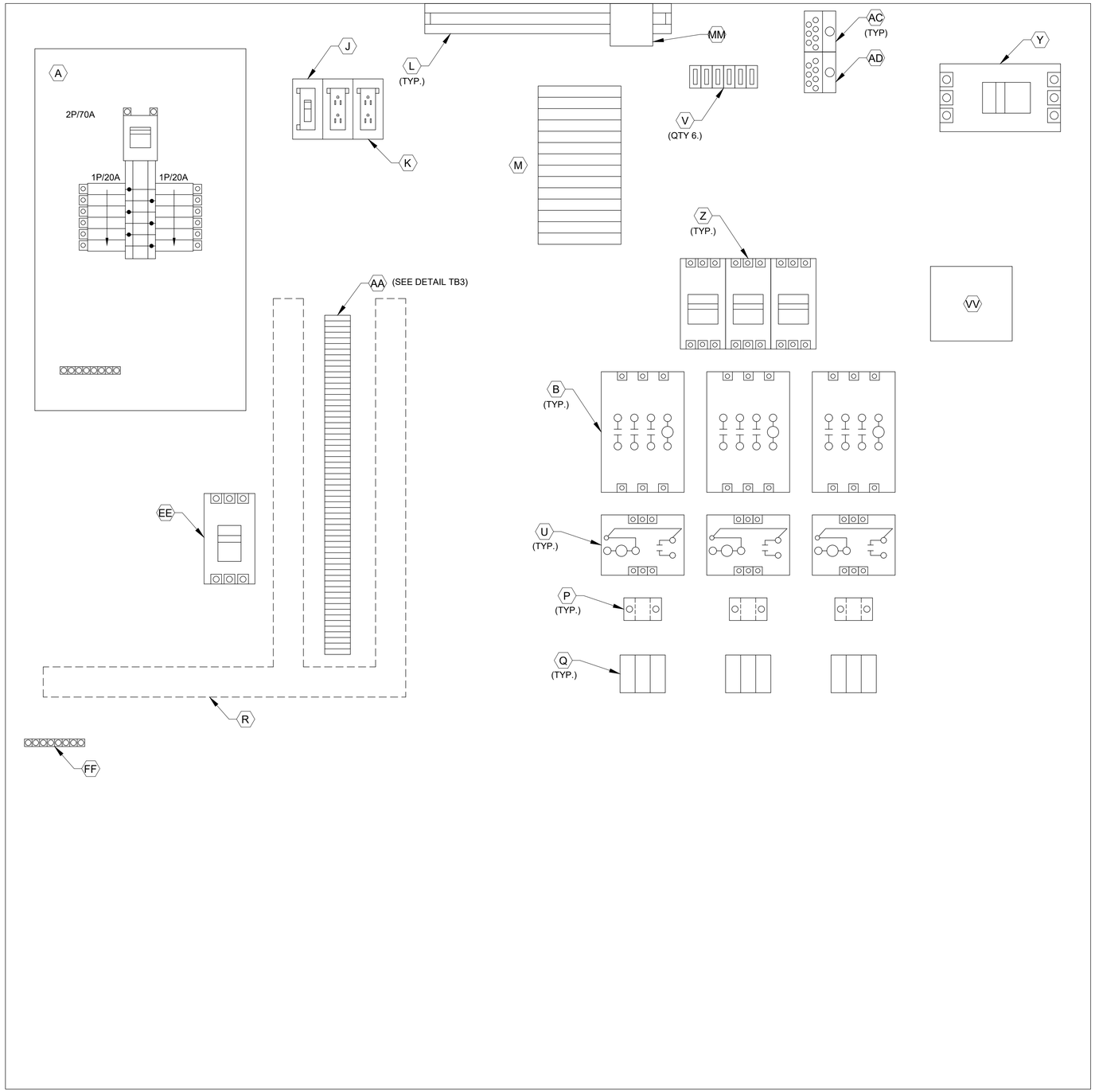
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-506	HORIZ: NONE VERT: NONE
SHEET NO. 205 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I_06.dwg



POWER PANEL
ELEVATION

3
18
L1A
L1N
SPARE
SPARE
103
104
105
106
107
108
110
113
115
116
119
SPARE
203
204
205
206
207
208
210
213
215
216
216
219
SPARE
303
304
305
306
307
308
310
313
315
316
316
319
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE

DETAIL TB3

NOTES:

1. SEE SHEET I-504 FOR EQUIPMENT SCHEDULE.

NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:50 PM PEN TABLE: Z_PUB_WKS_H.ctb

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LIFT STATIONS REHABILITATION
AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL CABINET
EQUIPMENT LAYOUT-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

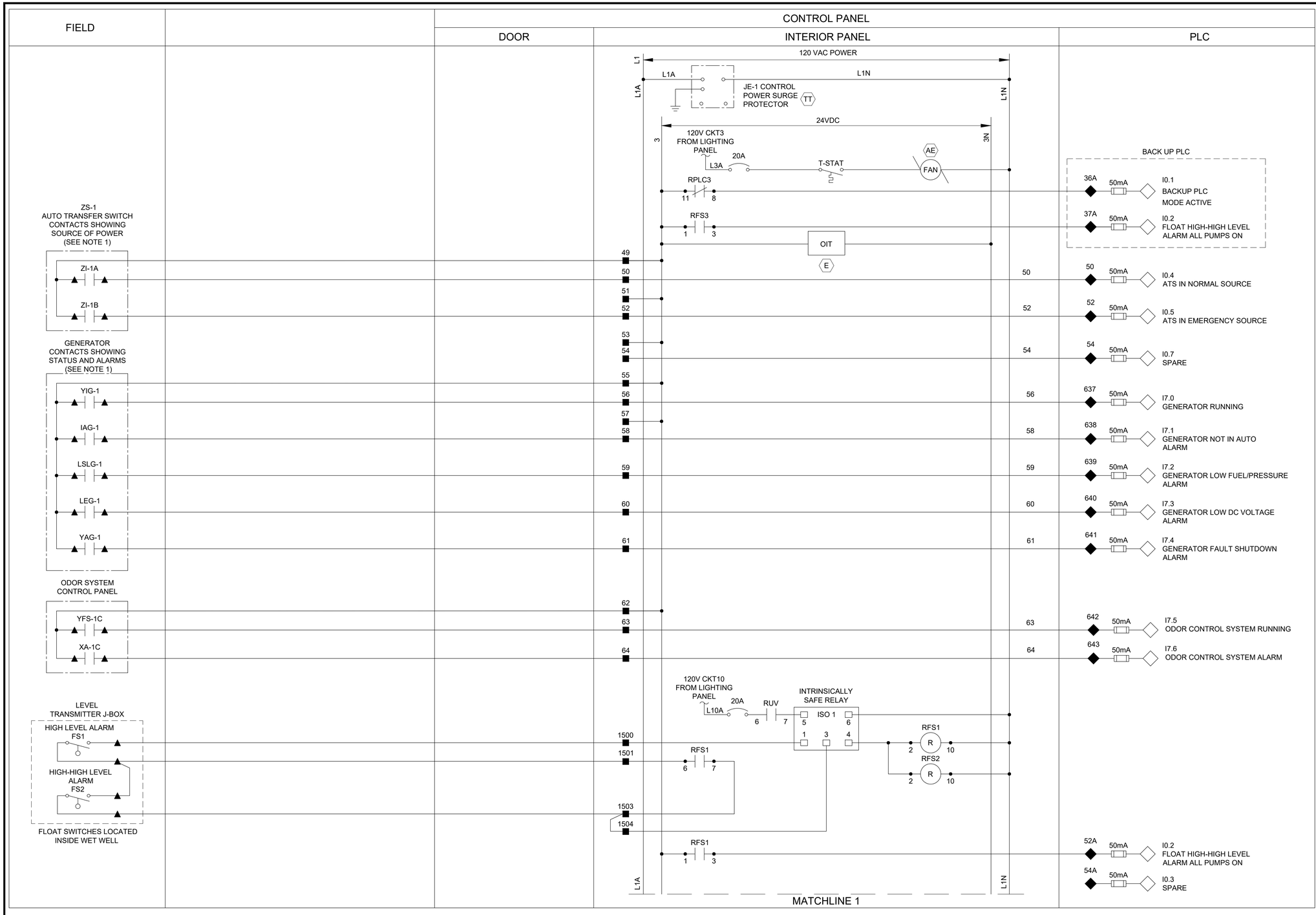
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-507	HORIZ: NONE VERT: NONE
SHEET NO. 206 OF 225	DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I-07.dwg



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. PROVIDE MANUAL TRANSFER SWITCH DRY CONTACT.
2. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-I

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

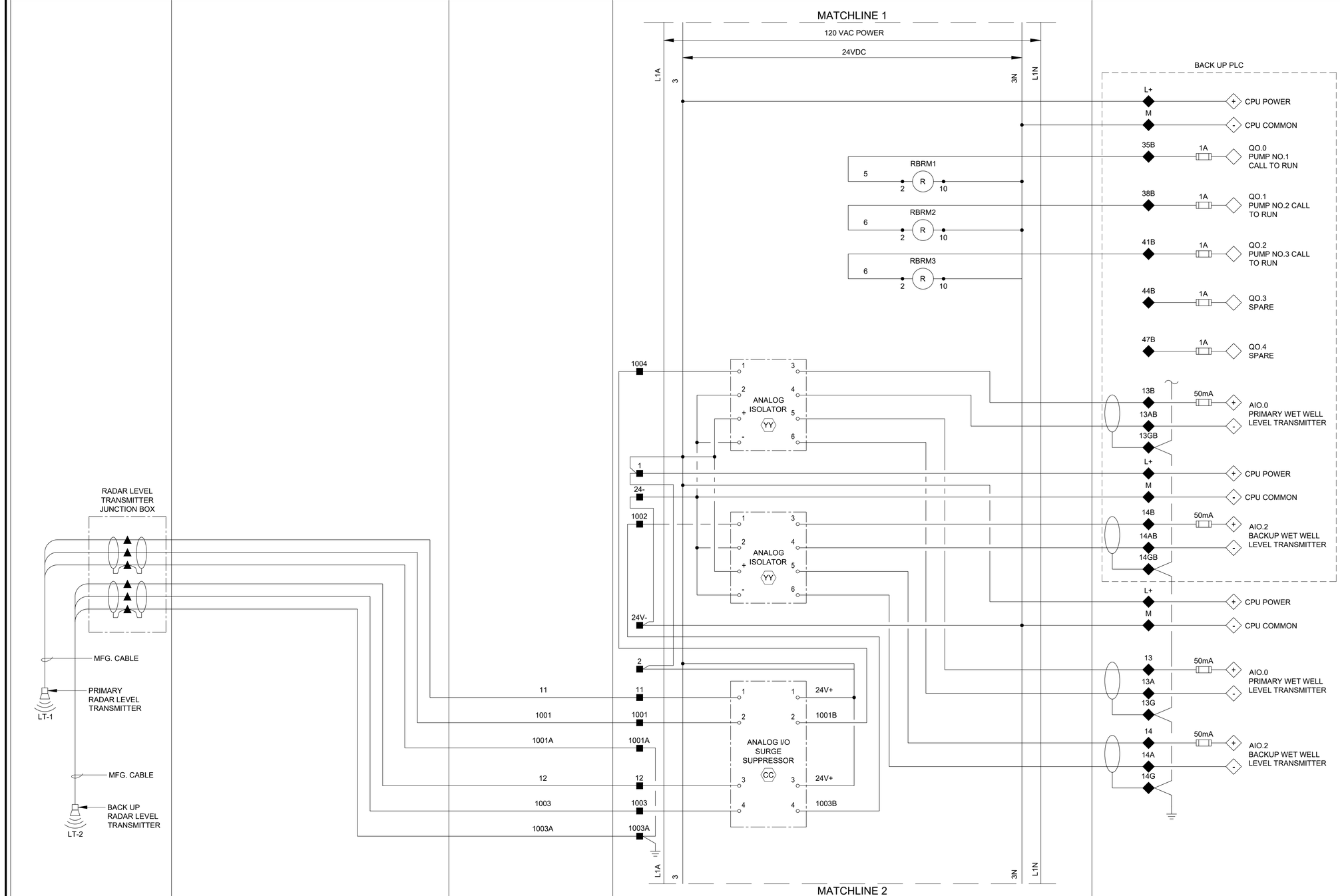
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-508	HORIZ: NONE VERT: NONE
SHEET NO. 207 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I_08.dwg

FIELD		CONTROL PANEL	
		DOOR	INTERIOR PANEL



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-II

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

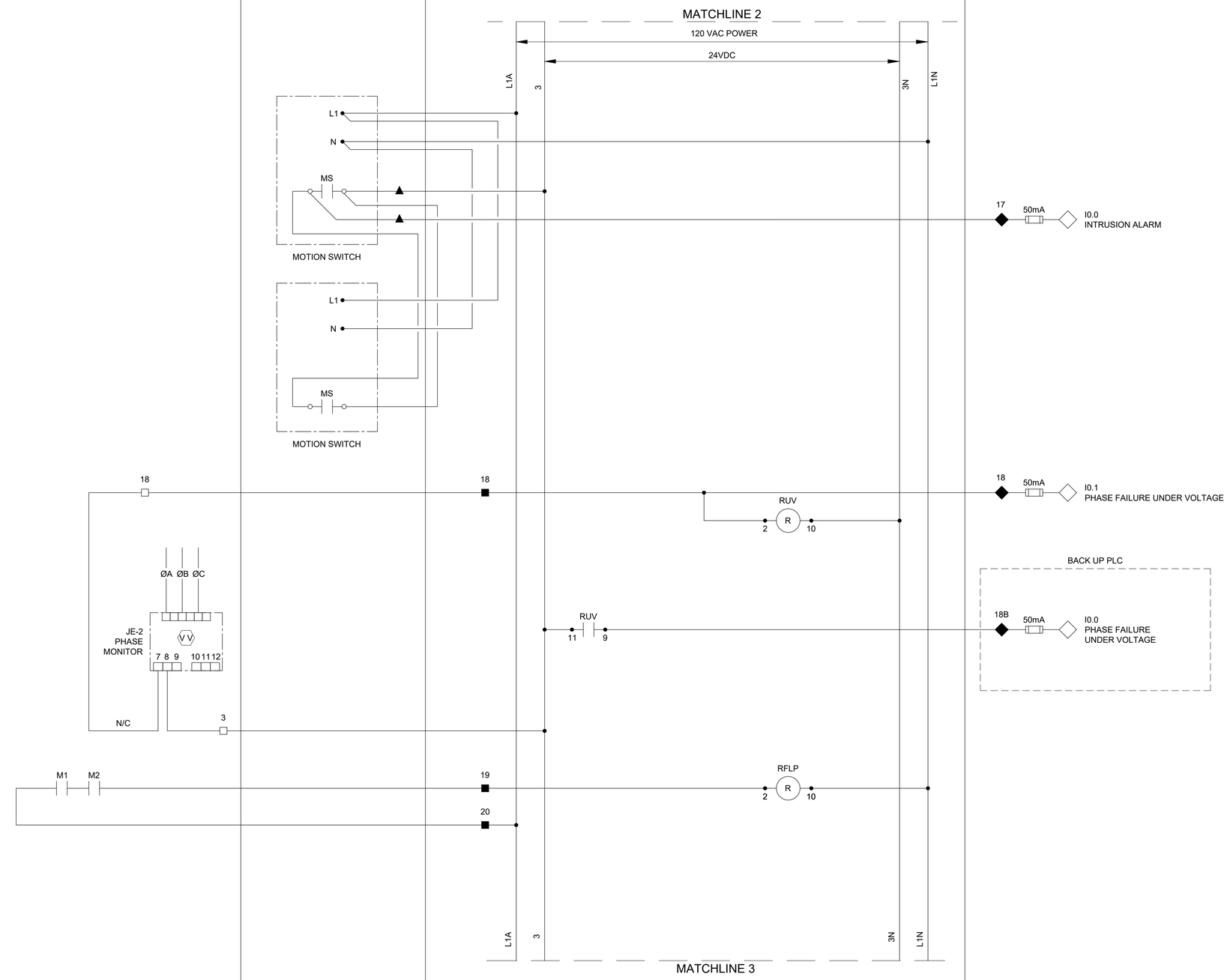
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-509	HORIZ: NONE VERT: NONE
SHEET NO. 208 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I-09.dwg

FIELD	POWER PANEL	CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. PROVIDE ONE LIMIT SWITCH PER EXTERIOR CONTROL PANEL AND POWER PANEL DOOR, WIRED IN PARALLEL.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-III

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-510	HORIZ: NONE VERT: NONE
SHEET NO. 209 OF 225	DRAWING SCALE

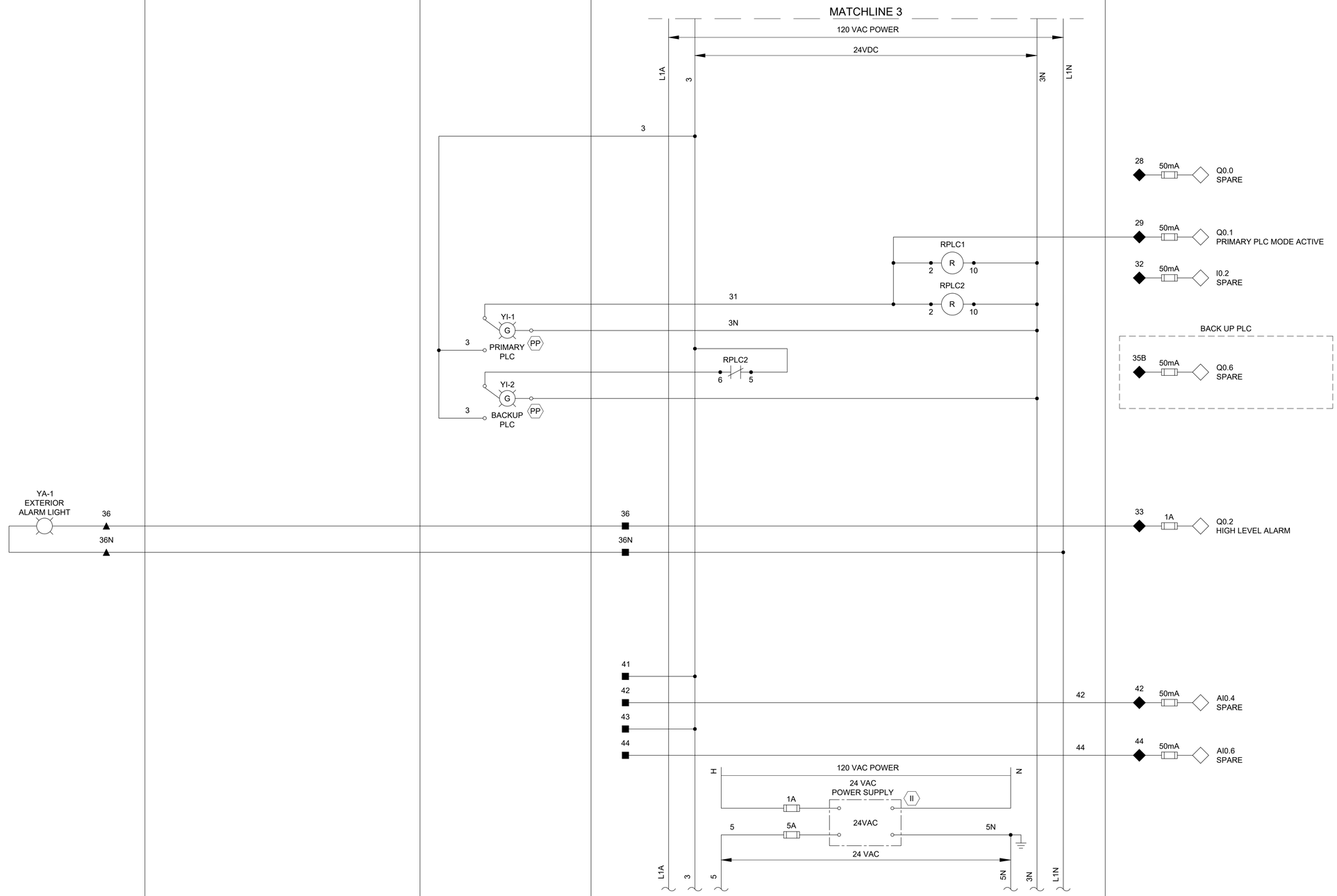
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NO.	DATE	REVISION	APP.

PLOTTED: 7/23/2025 1:50 PM PEN TABLE: Z_PUB_WKS_H.ctb

FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I_10.dwg

FIELD	POWER PANEL	CONTROL PANEL		
		DOOR	INTERIOR PANEL	PLC



LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
CONTROL PANEL
CONTROL WIRING DIAGRAM-IV

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

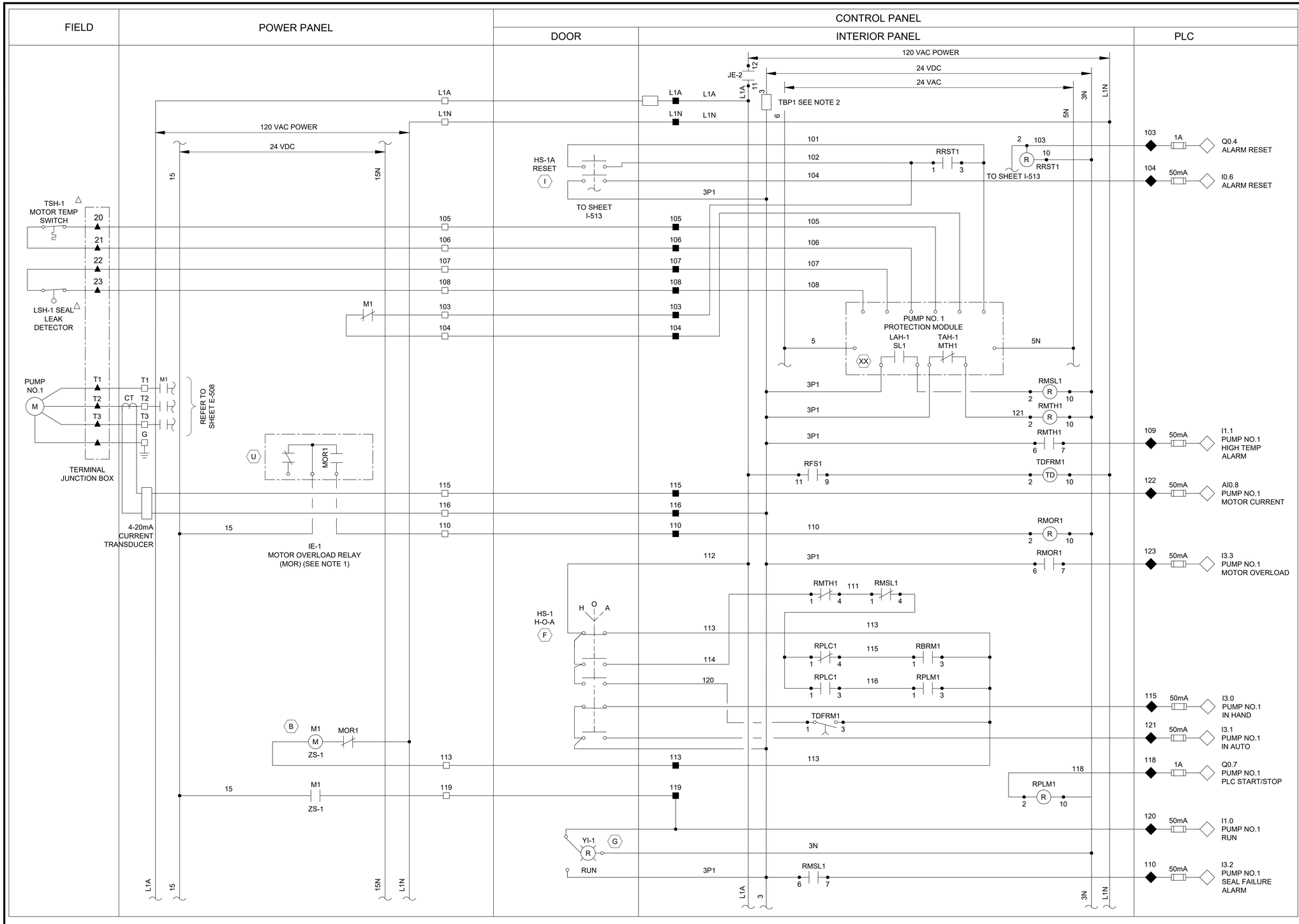
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-511	HORIZ: NONE VERT: NONE
SHEET NO. 210 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I-11.dwg



NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-503.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
PUMP NO.1
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

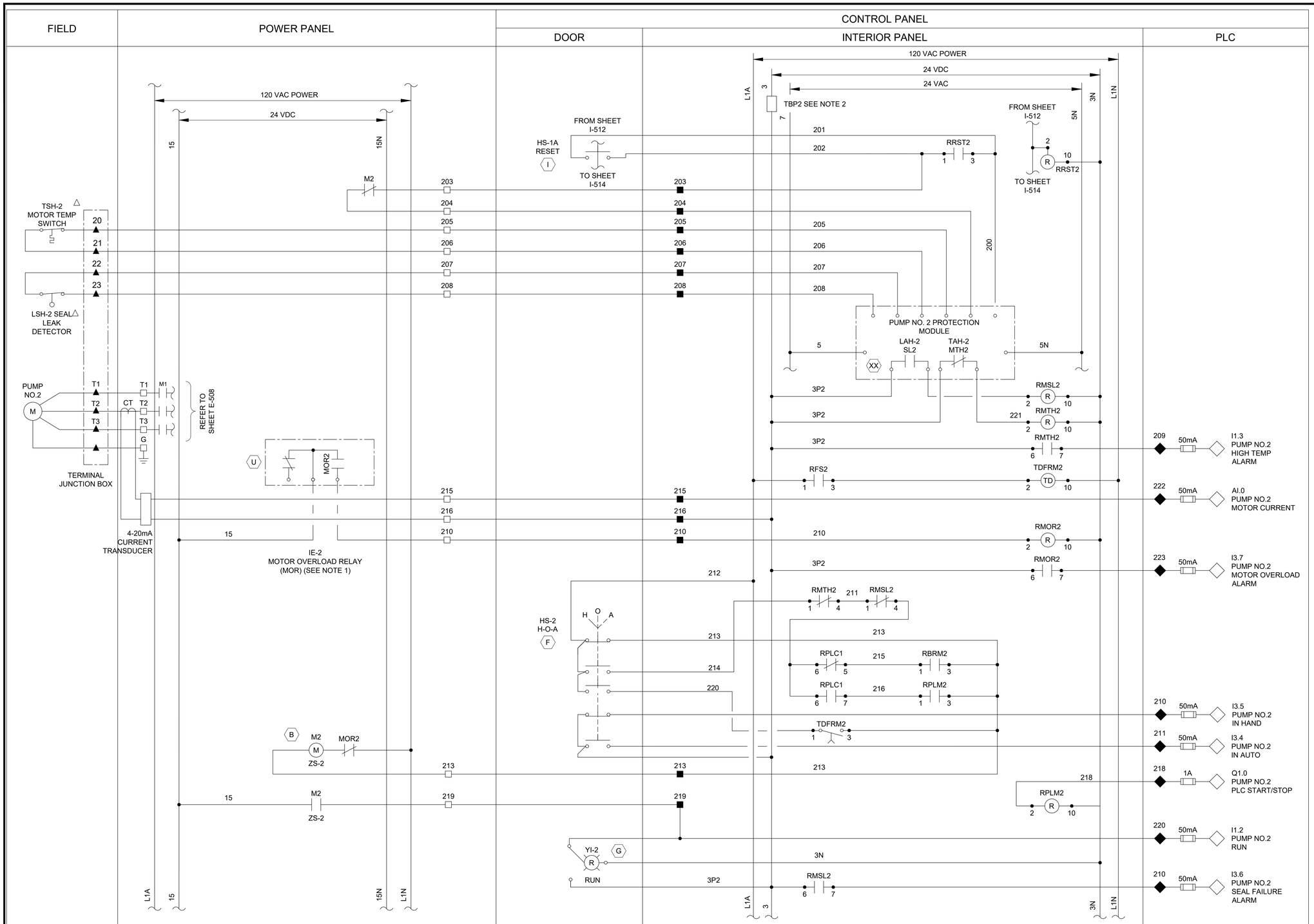
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-512	HORIZ: NONE VERT: NONE
SHEET NO. 211 OF 225	DRAWING SCALE

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FILE PATH: O:\H8104_Houston Lift Station Removal And Replacement\6 Drawings\Instrumentation And Control\Working\Stately Oaks\Stately Oaks_I-12.dwg



NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN IS NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM DRAWING NO. I-503.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
PUMP NO.2
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

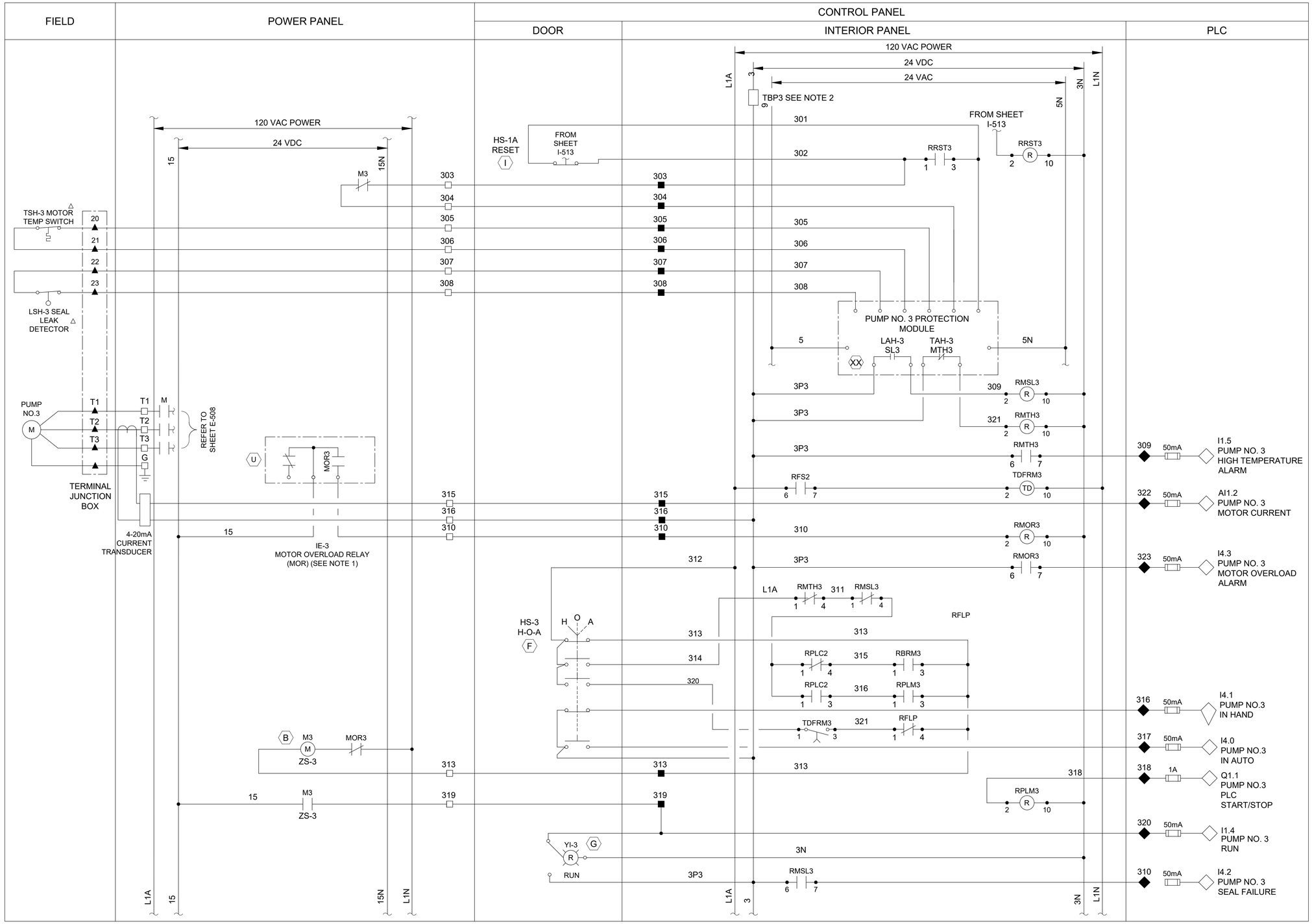
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-513	HORIZ: NONE VERT: NONE
SHEET NO. 212 OF 225	DRAWING SCALE

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NO.	DATE	REVISION	APP.

PEN TABLE: Z_PUB_WKS_H.ctb
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LEGEND

- △ DEVICE OR FIELD TERMINAL LOCATED AT MOTOR
- ✳ DEVICE OR FIELD TERMINAL LOCATED REMOTE
- □ DEVICE OR FIELD TERMINAL LOCATED AT MCC/POWER PANEL
- ■ FIELD TERMINAL LOCATED AT CONTROL PANEL
- ▲ REMOTE TERMINAL
- ● DEVICE TERMINAL NO.
- ◆ PLC INTERFACE TERMINAL

NOTES:

1. MOTOR OVERLOAD RELAY OUTPUT CONTACT SHOWN NORMALLY CLOSED WHEN RELAY IS DE-ENERGIZED, OPEN WHEN ENERGIZED, AND CLOSED WHEN IN ALARM. VERIFY OPERATION OF RELAY PROVIDED AND ADJUST CONNECTION OF RMOR AUXILIARY RELAYS.
2. FUSED TERMINAL ON TERMINAL BLOCK TB4 SEE CONTROL POWER AND COMMUNICATION WIRING DIAGRAM. DRAWING NO. I-503.
3. ALL FLOAT CONTROL CIRCUIT WIRES COLOR SHALL BE YELLOW.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

INSTRUMENTATION

STATELY OAKS
LIFT STATION
PUMP NO.3
CONTROL WIRING DIAGRAM

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

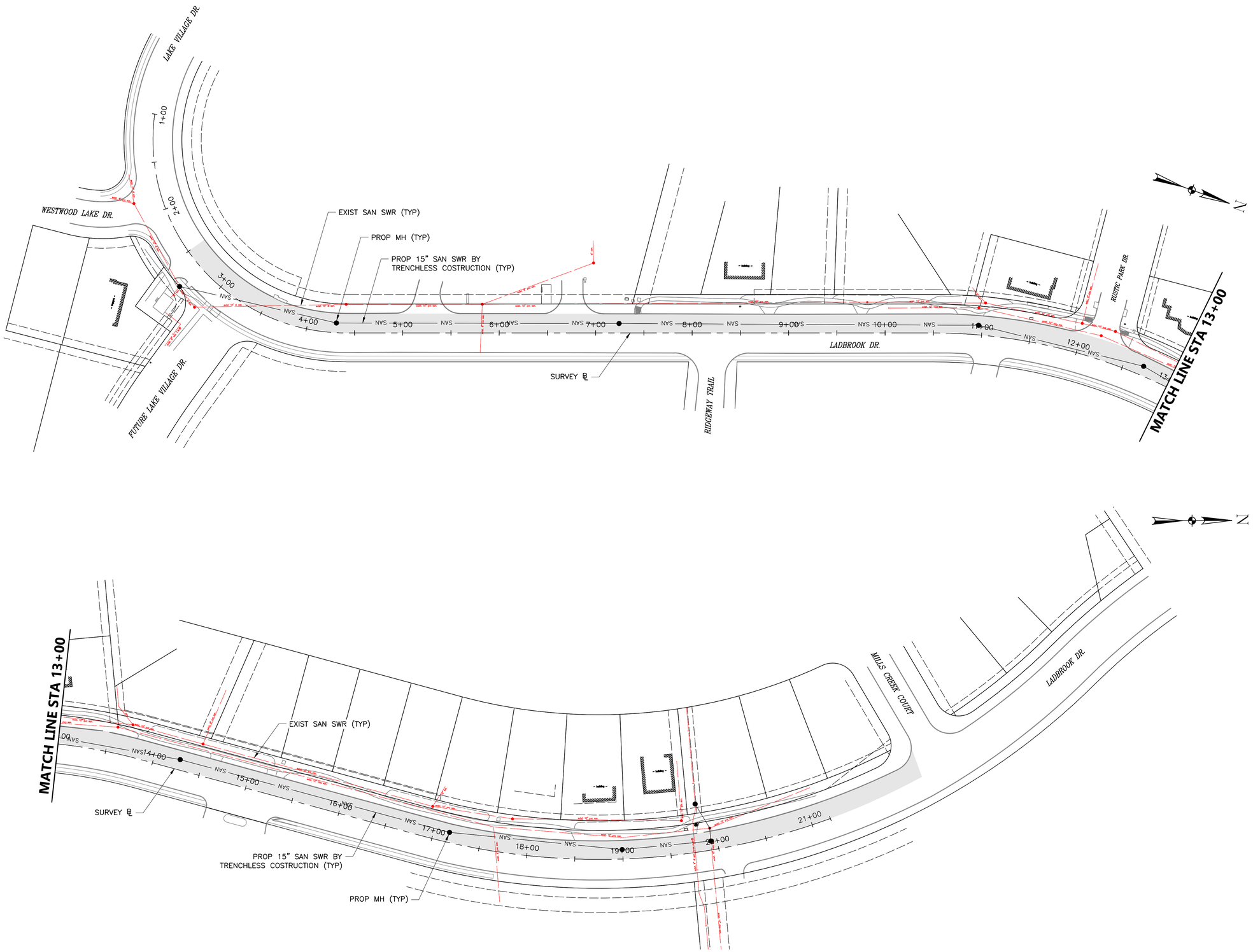
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. I-514
HORIZ: NONE
VERT: NONE
SHEET NO. 213 OF 225
DRAWING SCALE
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NO.	DATE	REVISION	APP.

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NOTES & LEGEND:

1. PROPOSED TRAFFIC CONTROL PLANS AS SHOWN ARE FOR DAY TIME OPERATION ONLY.
2. CONTRACTOR TO PLACE ALL STORM WATER POLLUTION PREVENTION DEVICES PER PLAN PRIOR TO CONSTRUCTION ACTIVITIES.
3. CONTRACTOR TO PLACE DRUMS/ LPCTB PER LIMITS SHOWN, AS SPECIFIED, AND NOTED ON TRAFFIC CONTROL PLAN.
4. CONTRACTOR TO PLACE ADVANCE WARNING SIGNS AS SPECIFIED, AND NOTED ON TRAFFIC CONTROL PLAN.
5. CONTRACTOR TO CONSTRUCT THE PROPOSED MANHOLES AND 15" SAN SWR. STARTING FROM SOUTH TOWARD NORTH.

CONSTRUCTION AREA

50 0 50 100

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 3:37 PM

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION # F-1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

HOWN ENGINEERS

2825 WILCREST DRIVE,
SUITE 218
HOUSTON, TX 77042
TEL: (832) 899-5657
TBPELS FIRM REG: F-26176

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A. SETAREHASEMAN, P.E.
68184
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm # F-26176

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TRAFFIC CONTROL PLAN

LADBROOK LIFT STATION
TRAFFIC CONTROL PLAN
OVERALL LAYOUT
SHEET 1 OF 1

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. TC-201

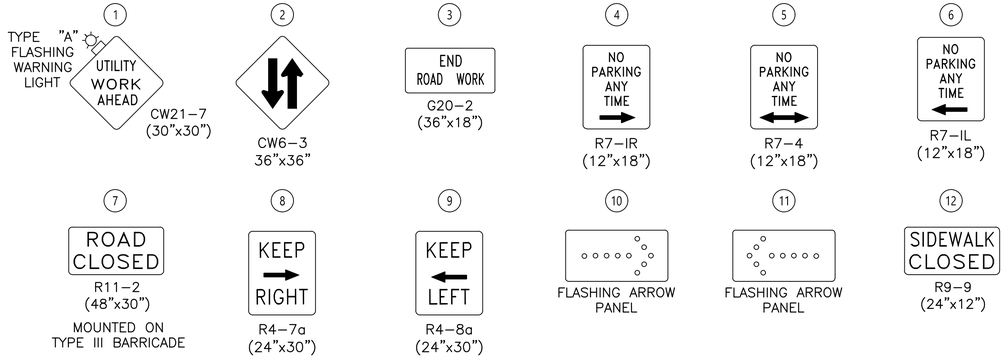
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VERT: N/A

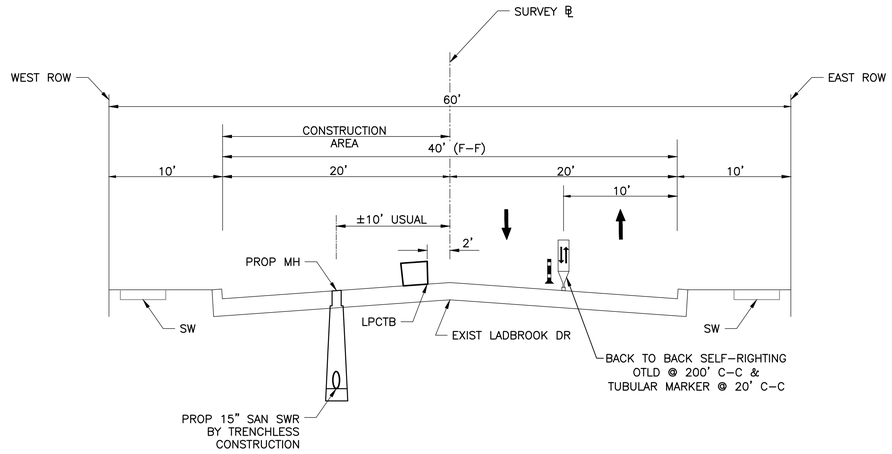
SHEET NO. 214 OF 225

DRAWING SCALE

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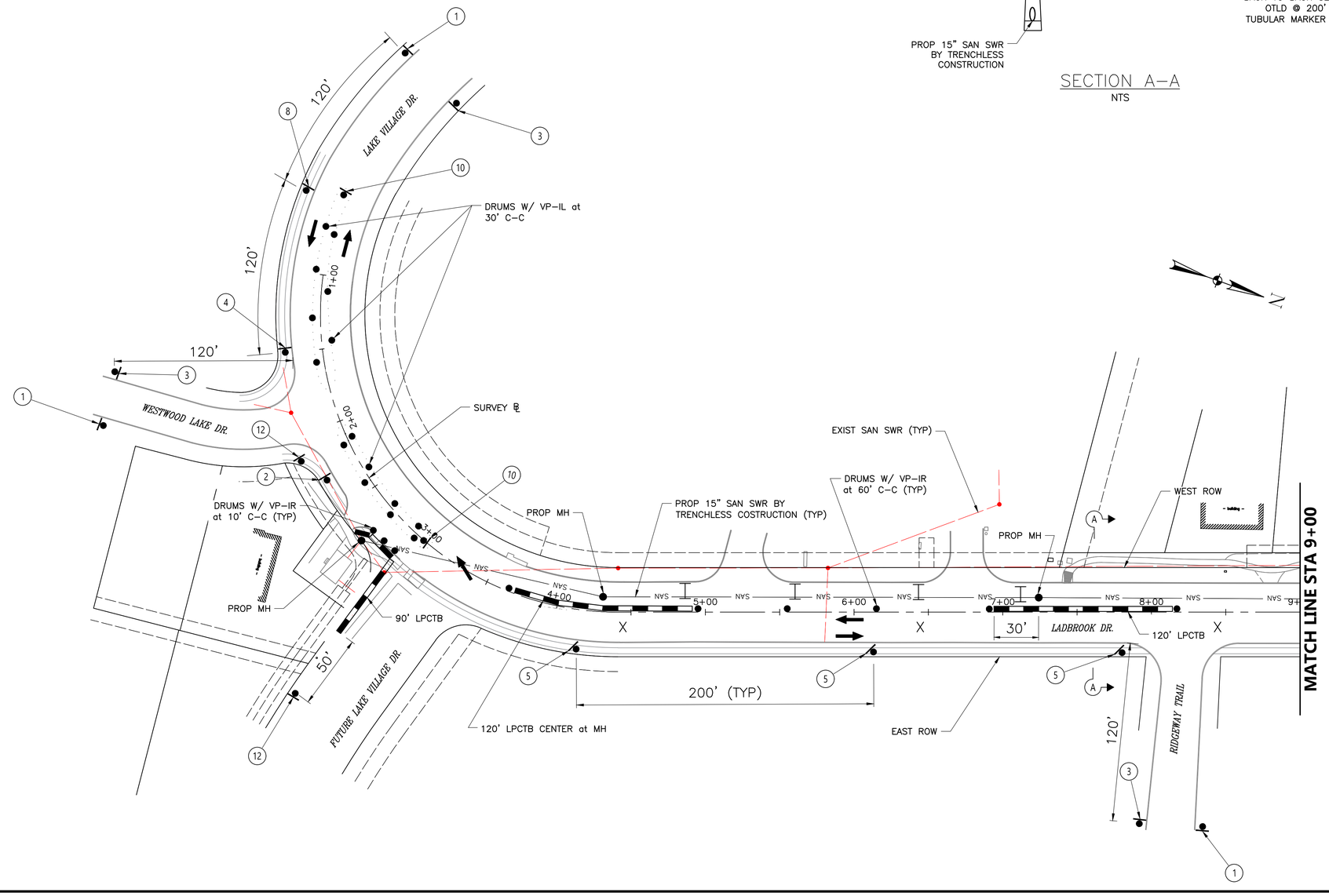
SECTION A-A
NTS

NOTES & LEGEND:

1. SEE "TRAFFIC CONTROL PLAN GENERAL NOTES" & "TRAFFIC CONTROL PLAN OVERALL LAYOUT & CONSTRUCTION SEQUENCING" SHEETS FOR MORE INFORMATION.
2. CONTRACTOR SHALL PROVIDE FLAGMEN TO DIRECT THE TRAFFIC IN ORDER TO ASSIST DRIVEWAY ENTRY/EXIT FOR LOCAL RESIDENTS DURING CONSTRUCTION HOURS.
3. CONTRACTOR SHALL PROVIDE ACCESS TO ALL DRIVEWAYS ALONG THIS PROJECT AT ALL TIMES.

- DIRECTION OF TRAFFIC
- DRUMS
- LPCTB TYPE 1 & TYPE 2 AT APPROACHES W/ WHITE REFLECTORS ON TOP AT 10' C-C
- TEMPORARY SIGN
- TYPE III BARRICADE W/ TWO TYPE "A" WARNING LIGHTS
- BACK TO BACK SELF-RIGHTING OTLD @ 200' C-C & TUBULAR MARKER @ 20' C-C
- TUBULAR MARKER

40 0 40 80



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A. SETAREHASEMAN, P.E.
Engineer
68184
License Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm # F-26176

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TRAFFIC CONTROL PLAN

LADBROOK LIFT STATION
TRAFFIC CONTROL PLAN
SHEET 1 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

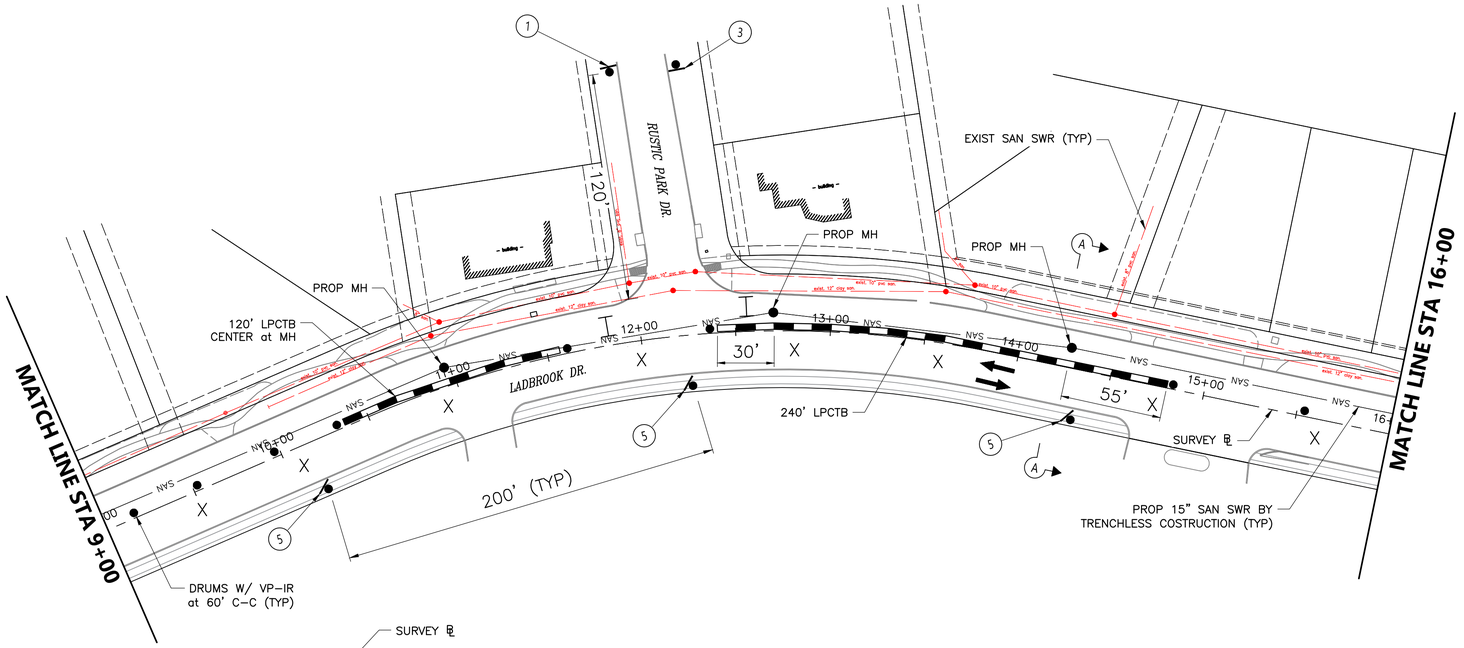
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SHEET NO. 215 OF 225	DRAWING SCALE

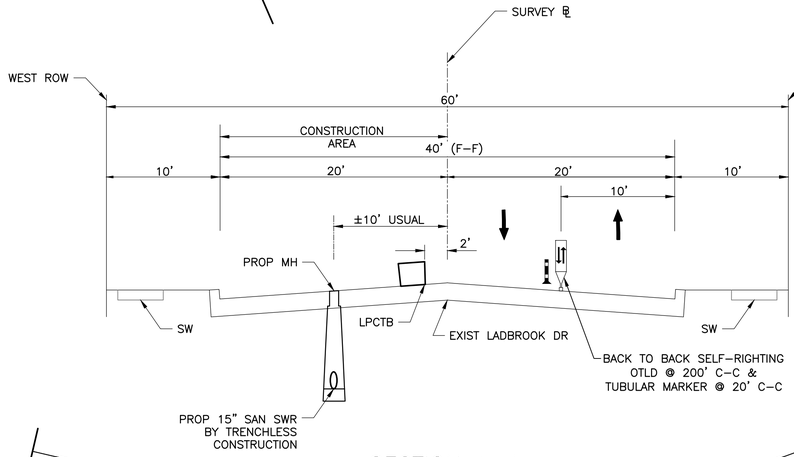
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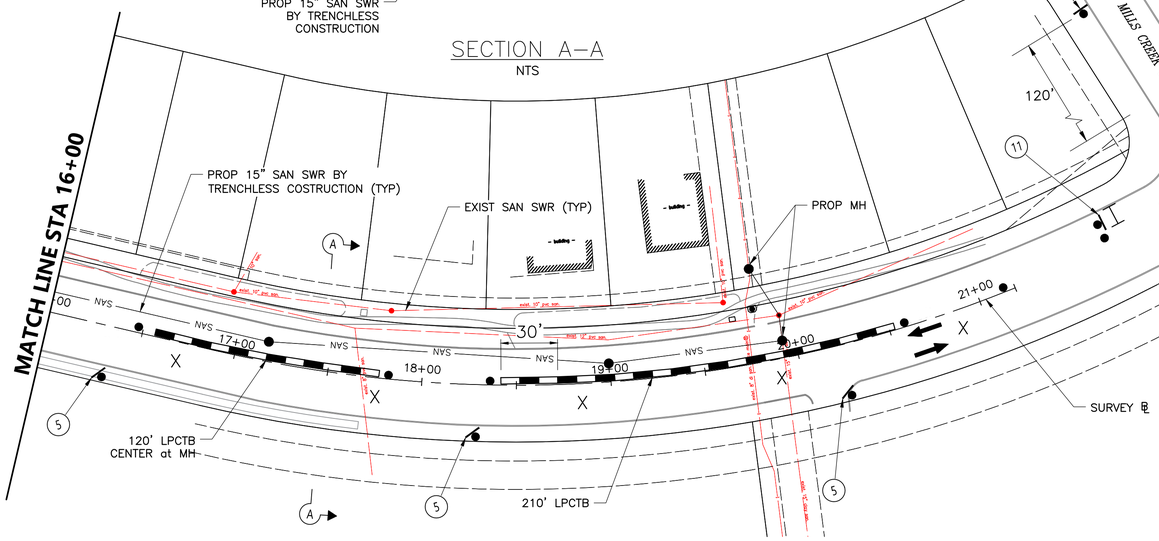
NO.	DATE	REVISION	APP.

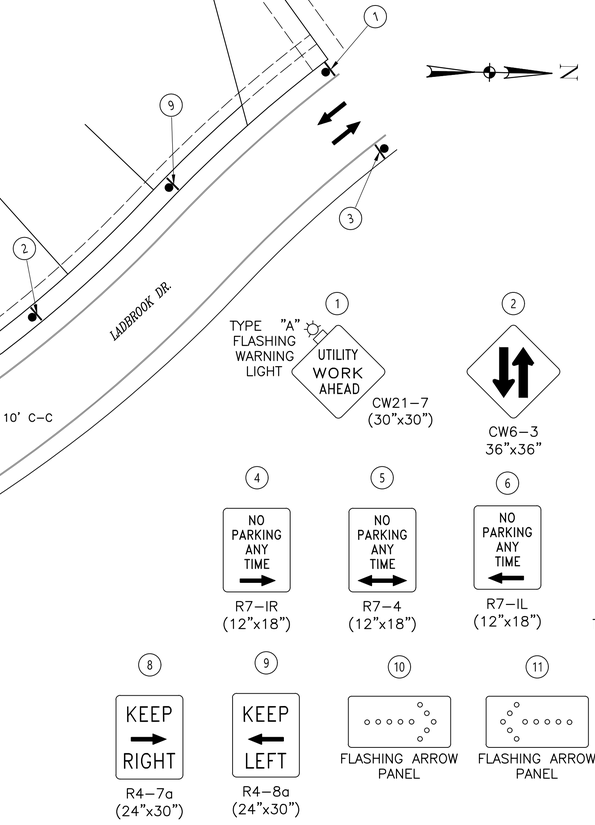
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NOTES & LEGEND:

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- TUBULAR MARKER

40 0 40 80

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68184
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm # F-26176

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TRAFFIC CONTROL PLAN

LADBROOK LIFT STATION
TRAFFIC CONTROL PLAN
SHEET 2 OF 2

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

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HORIZ: 1"=40'
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GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) LATEST EDITION WITIH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
2. ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM THE LATEST VERSION OF THE TMUTCD.
3. NO LANES SHALL BE CLOSED DURING THE HOURS OF 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM MONDAY THRU FRIDAY WITHOUT APPROVAL OF THE CITY TRAFFIC ENGINEER.
4. NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00 PM TO 7:00 AM.
5. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF THROUGH LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS. TRAFFIC CONTROL PLANS SHALL INCLUDE ONE–WAY AND/OR DETOUR PLANS. CONTRACTOR SHALL MAINTAIN ADA COMPLIANT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO ALL THE BUS STOPS.
6. CONTRACTOR SHALL MAINTAIN TRAFFIC LANES AND DETOURS ACCORDING TO TRAFFIC CONTROL PLANS DURING WORKING HOURS.
7. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON–WORKING HOURS, AND OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE.
8. IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT METHOD OF "TRAFFIC CONTROL PLANS" DURING THE CONSTRUCTION THAN WHAT IS OUTLINED IN THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT AN ALTERNATE SET OF TRAFFIC CONTROL PLANS TO THE CITY OF HOUSTON PROJECT MANAGER FOR APPROVAL TEN WORKING DAYS PRIOR TO IMPLEMENTATION. THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SHALL BE SEALED BY A LICENSED ENGINEER IN THE STATE OF TEXAS. OFFICE OF CITY ENGINEER, MOBILITY PERMITS SECTION REPRESENTATIVE APPROVAL IS REQUIRED TO ACCEPT THE PROPOSED CHANGES.
9. CONTRACTOR SHALL SECURE LANE/SIDEWALK/BICYCLE FACILITY CLOSURE PERMITS FROM OFFICE OF CITY ENGINEER (MOBILITY PERMIT SECTION AT https://geohub.houstontx.gov) BEFORE IMPLEMENTING THE TRAFFIC CONTROL PLAN. THE APPLICATION MUST BE SUBMITTED AT LEAST TEN DAYS PRIOR TO THE IMPLEMENTATION OF THE TRAFFIC CONTROL PLAN AND/OR BEGINNING CONSTRUCTION WORK. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS, CONSTRUCTION SEQUENCING, AND CONSTRUCTION SCHEDULE WITH THE APPLICATION.
10. CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT ALL TIMES.
11. DURING PAVEMENT SURFACE RESTORATION PROJECTS; THE CONTRACTOR SHALL NOT OPEN CLOSED LANES UNTIL THE PAVEMENT SURFACE HAS CURED ENOUGH TO ALLOW VEHICULAR TRAFFIC ACCORDING TO CITY OF HOUSTON STANDARD SPECIFICATIONS.
12. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND COORDINATING ALL CONSTRUCTION ACTIVITIES WITH STAKE HOLDERS IN THE VICINITY INCLUDING EMERGENCY RESPONSE AGENCIES SUCH AS HOUSTON POLICE DEPARTMENT, HOUSTON FIRE DEPARTMENT, AND METROPOLITAN TRANSIT AUTHORITY.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ISSUING ALL WORK DIRECTIVES TO ALL SUB–CONTRACTORS, UTILITY COMPANIES, AND ALL OTHER ENTITIES PERFORMING CONSTRUCTION WORK ASSOCIATED WITH THE PROJECT.
14. NOTHING IN THESE NOTES OR PLANS SHALL RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT; INCLUDING SAFETY OF ALL MODES OF TRANSPORTATION, PERSONS, AND PROPERTY, AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO WORKING HOURS.
15. THE OFFICE OF CITY ENGINEER (MOBILITY PERMITS GROUP) PER THE DIRECTION OF THE CITY TRAFFIC ENGINEER HAVE THE RIGHT TO DEMAND THE INSTALLATION OF ADDITIONAL TRAFFIC CONTROL DEVICES OR MODIFICATIONS OF THESE PLANS AND NOTES, AS DEEMED NECESSARY TO PROMOTE THE SAFE AND ORDERLY FLOW OF TRAFFIC, INCLUDING PEDESTRIANS AND BICYCLES, THROUGH THE CONSTRUCTION WORK ZONE. THE CONTRACTOR SHALL COMPLY WITH THESE ADDITIONAL REQUESTS OR MODIFICATIONS WITH DUE DILIGENCE.
16. ALL EXISTING TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE MAINTAINED IN VISIBLE LOCATIONS DURING CONSTRUCTION UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER. THE CONTRACTOR SHALL RESTORE OR REPLACE (AT THE DISCRETION OF THE CITY TRAFFIC ENGINEER) ANY PAVEMENT MARKING OR SIGNING DAMAGE DURING CONSTRUCTION OPERATIONS, INCLUDING RAISED PAVEMENT MARKERS (RPMS).
17. WHEN ENTERING OR LEAVING ROADWAYS CARRYING PUBLIC TRAFFIC, THE CONTRACTOR'S EQUIPMENT, WHETHER EMPTY OR LOADED SHALL IN ALL CASES YIELD TO PUBLIC TRAFFIC WITH THE ASSISTANCE OF CONTRACTOR PROVIDED CERTIFIED FLAGGER/PEACE OFFICER.
18. ACCESS TO DRIVEWAYS ADJACENT TO THE CONSTRUCTION WORK ZONE SHALL BE MAINTAINED AT ALL TIMES AS MUCH AS POSSIBLE. ADDITIONAL CONES AND/OR DELINEATORS MAY BE REQUIRED TO DELINEATE THE DRIVEWAY ACCESS ROUTE THROUGH THE CONSTRUCTION WORK ZONE. A MINIMUM OF ONE TRAVEL LANE SHALL BE MAINTAINED ACROSS THE DRIVEWAYS, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM CITY OF HOUSTON PROJECT MANAGER.
19. SPILLAGE RESULTING FROM HAULING OPERATIONS ALONG OR ACROSS ANY PUBLIC TRAVELED WAY SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
20. THE CONTRACTOR SHALL SUBMIT AN APPLICATION FOR TEMPORARY PARKING RESTRICTIONS IF THERE ARE PARKING METERS LOCATED AT THE PROPOSED LANE CLOSURES FROM PARKING MANAGEMENT DIVISION (832–393–8690) AT LEAST TEN BUSINESS DAYS BEFORE IMPLEMENTATION OF LANE CLOSURES. IN ADDITION, TEMPORARY NO PARKING SIGNS SHALL BE POSTED 24 HOURS PRIOR TO COMMENCEMENT OF WORK.
21. ADDITIONAL OFF DUTY OFFICERS/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE BLOCKED AT THE DISCRETION OF THE CITY PROJECT MANAGER EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS.
22. THE CONTRACTOR SHALL REPLACE WITHIN 72 HOURS, ALL TRAFFIC SIGNAL LOOP DETECTORS DAMAGED DURING CONSTRUCTION.
23. IN GENERAL, A SOLAR POWERED FLASHING ARROW BOARD SHALL BE REQUIRED ON ALL MAJOR THOROUGHFARE LANES CLOSURES. EXCEPTIONS TO FLASHING ARROW BOARDS AND/OR IMPLEMENTATION ON RESIDENTIAL LANE CLOSURES SHALL BE APPROVED BY CITY TRAFFIC ENGINEER.
24. APPROVED TRAFFIC CONTROL PLAN SHALL BE IN PLACE BEFORE STARTING ANY EXCAVATION.
25. WATER FILLED BARRIERS CAN BE USED AS INSTRUCTED BY THE ENGINEER AND APPROVED BY THE CITY FOR PROJECTS WHERE SPACE IS LIMITED AND HEAVY EQUIPMENT TO PLACE CONCRETE BARRIERS IS NOT FEASIBLE. WATER FILLED BARRIERS SHALL NOT BE USED ON ROADWAYS WITH A POSTED SPEED LIMIT MORE THAN 45 MPH.
26. WATER FILLED BARRIERS MUST BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S REQUIREMENTS AND ROUTINELY INSPECTED FOR DEFECTS.
27. IF WATER FILLED BARRIER IS PROVIDED, USE ENVIRONMENTALLY SAFE ANTI–FREEZING AGENT IN THE WATER WHEN IT IS APPLICABLE PER MANUFACTURER SPECIFICATIONS AND RECOVER AGENT WHEN THE BARRIER IS DRAINED.
28. DISPOSE OF WATER AND AGENT PROPERLY. DO NOT DRAIN WATER FILLED BARRIER INTO OR ACROSS AN EXISTING TRAVEL LANE.
29. PROVIDE BARRIER UNITS THAT ARE CAPABLE OF BEING LIFTED AND MOVED WHEN FILLED IF DRAINING IS NOT POSSIBLE.
30. PROVIDE WATER FILLED BARRIER THAT ACTS AS ITS OWN FREE STANDING, NON–REDIRECTIVE END TREATMENT.
31. WHEN WATER FILLED BARRIERS ARE USED TO CHANNELIZE PEDESTRIANS, THEY MUST HAVE A CONTINUOUS DETECTABLE BOTTOM FOR USERS OF LONG CANES AND THE TOP OF THE UNIT SHALL NOT BE LESS THAN 32 INCHES IN HEIGHT.
32. ANY CLOSURE OF A PEDESTRIAN OR BICYCLE FACILITY SHALL REQUIRE THE SHORTEST DETOUR THAT MAINTAINS THE SAFETY OF PEDESTRIAN AND/OR BICYCLISTS.

SPACING FOR CHANNELIZING DEVICES

A. PLASTIC DRUMS ON MERGING TAPER @ 30' C – C WITH CHEVRON SIGN @ 60' C – C AND WARNING LIGHTS FOR OVERNIGHT CLOSURE.

B. PLASTIC DRUMS ON DOWNSTREAM TAPER @ 30' C – C (RETURN TAPER AND BARRICADE ARE OPTIONAL AND DIVIDED ROADWAY SECTION)

C. PLASTIC DRUMS ON RADII @ 35' C –C.

D. PLASTIC DRUMS ON TANGENT @ 35' C – C WITH VERTICAL PANEL AT 70' C – C AND APPROVED WARNING LIGHT @ 70' C – C (FOR OVERNIGHT CLOSURE).

E. PLASTIC DRUMS IN FRONT OF CONSTRUCTION ZONE @ 20' C – C WITH VERTICAL PANEL AT 40' C – C AND APPROVED WARNING LIGHT @ 40' C – C (FOR OVERNIGHT CLOSURE).

F. CONCRETE TRAFFIC BARRIER (CTB) OR LOW PROFILE CONCRETE TRAFFIC BARRIER (LPCTB) WITH APPROVED REFLECTORS @ 10' C – C IF PAVEMENT DROP IS GREATER THAN 1 FOOT.

G. PLASTIC DRUMS W/GUARD RAIL MOUNTED.

H. SELF– RIGHTING VERTICAL PANEL SPACING.
– 4 LANES TO 2 LANES UNDIVIDED ROADWAY SECTION @ 20' C – C.
– 4 LANES DIVIDED ROADWAY TO ONE SIDE TWO WAY ROADWAY @ 20' C – C.
– LEFT LANE AND RIGHT LANE STORAGE BAYS @ 15' C – C.

I. SPACING SHOWN ON TRAFFIC CONTROL SHALL SUPERSEDE THE ABOVE SPACING.

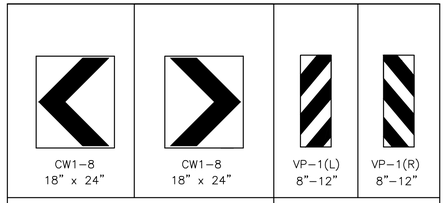
J. SPACING MAY BE ADJUSTED TO PROVIDE DRIVEWAYS, INTERSECTIONS AND /OR MEDIAN OPENINGS.

TABLE C3 – TYPICAL SIGN SPACING, TAPER LENGTHS, AND SUGGESTED SPACING OF CHANNELIZATION DEVICES

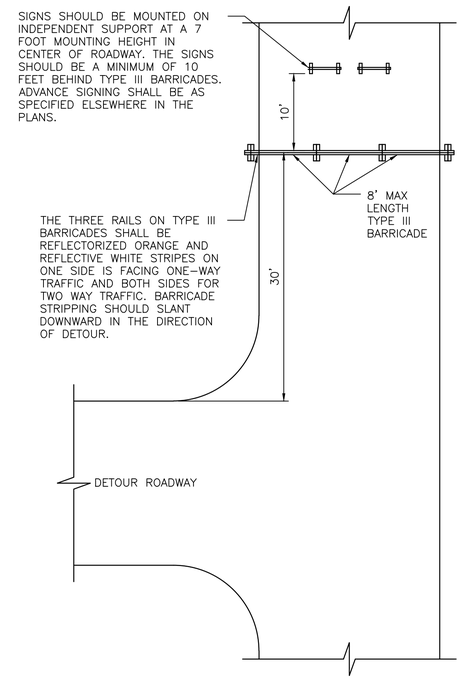
POSTED SPEED (MPH)	SIGN SPACING "X" (FEET)	MIN. DESIRABLE TAPER LENGTH "L"			SUGGESTED MAXIMUM SPACING OF DEVICE	
		10' OFFSET	11' OFFSET	12' OFFSET	ON A TAPER	ON A TANGENT
30	120'	150'	165'	180'	30'	60'–75'
35	160'	205'	225'	245'	35'	70'–90'
40	240'	265'	295'	320'	40'	80'–100'
45	320'	450'	495'	540'	45'	90'–110'
50	400'	500'	550'	600'	50'	100'–125'
55	500'	550'	605'	660'	55'	110'–140'

TABLE C4 – STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

POSTED SPEED (MPH)	DISTANCE "D" (FEET)
30	200
35	250
40	305
45	360
50	425
55	495



CHANNELIZATION AND BARRICADES



PLAN VIEW
TYPE III BARRICADE (POST AND SKID)
TYPICAL APPLICATION

LEGEND:

- SIGN
- FLAGGER
- APPROVED CHANNELIZATION DEVICE
- BARRICADE
- FLASHING ARROW PANEL
- AREA UNDER CONSTRUCTION
- EXISTING TRAVEL WAY
- TRAFFIC CONTROL PLAN DETOUR TRAVEL WAY

NO.	DATE	REVISION	APP.

PEN TABLE: ----

APPROVED BY:	APPROVED BY:
DocuSigned by: Sukrit Kanwar 9EF8B0C641F5478...	DocuSigned by: KHANG NGUYEN 95A29EFDA7594CD...
CITY ENGINEER	CITY TRAFFIC ENGINEER
APPROVED BY: DocuSigned by: Carol Haddock A9C4169B72B3453...	
DIRECTOR OF HOUSTON PUBLIC WORKS	
EFF DATE: NOV–27–2023	DWG NO: 01555–01

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Texas Registered Engineering Firm # F-26176

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TRAFFIC CONTROL PLAN

LADBROOK LIFT STATION
TCP NOTES, CHANNELIZING DEVICES, AND BARRICADES
SHEET 1 OF 1

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

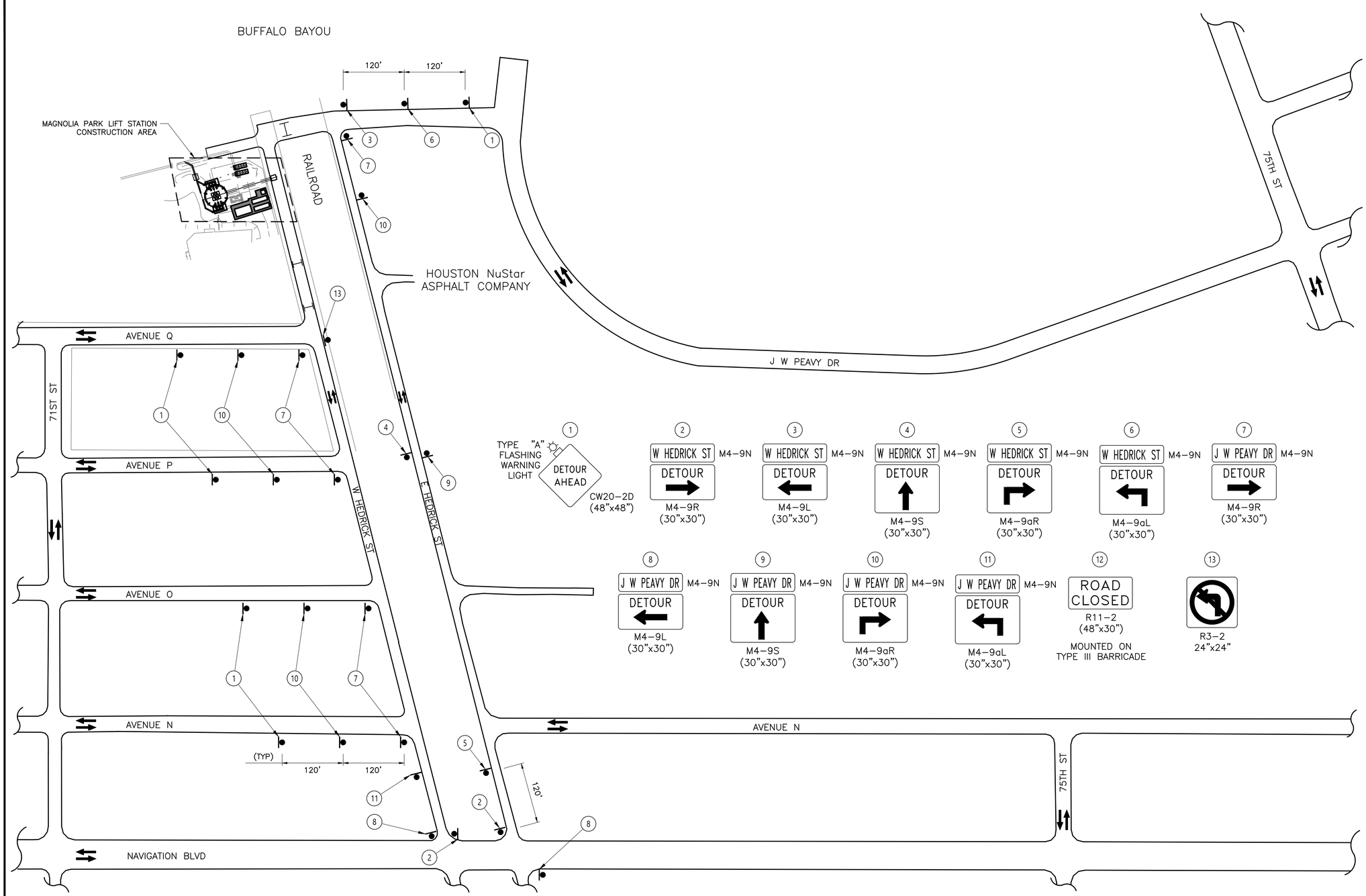
CITY OF HOUSTON
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WATER | STORM WATER QUALITY
WASTE WATER | FACILITIES
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TC-204	VERT: N/A
SHEET NO. 217 OF 225	DRAWING SCALE

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NOTES & LEGEND:

- TYPE III BARRICADE W/ TWO TYPE "A" WARNING LIGHTS
- DIRECTION OF TRAFFIC
- TEMPORARY SIGN

1. TYPE "A" FLASHING WARNING LIGHT
2. W HEDRICK ST M4-9N / DETOUR / M4-9R (30"x30")
3. W HEDRICK ST M4-9N / DETOUR / M4-9L (30"x30")
4. W HEDRICK ST M4-9N / DETOUR / M4-9S (30"x30")
5. W HEDRICK ST M4-9N / DETOUR / M4-9aR (30"x30")
6. W HEDRICK ST M4-9N / DETOUR / M4-9aL (30"x30")
7. J W PEAVY DR M4-9N / DETOUR / M4-9R (30"x30")
8. J W PEAVY DR M4-9N / DETOUR / M4-9L (30"x30")
9. J W PEAVY DR M4-9N / DETOUR / M4-9S (30"x30")
10. J W PEAVY DR M4-9N / DETOUR / M4-9aR (30"x30")
11. J W PEAVY DR M4-9N / DETOUR / M4-9aL (30"x30")
12. ROAD CLOSED R11-2 (48"x30") MOUNTED ON TYPE III BARRICADE
13. R3-2 24"x24"

CW20-2D (48"x48")

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Engineer
68184
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm # F-26176

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TRAFFIC CONTROL PLAN

MAGNOLIA PARK LIFT STATION
DETOUR PLAN
SHEET 1 OF 1

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

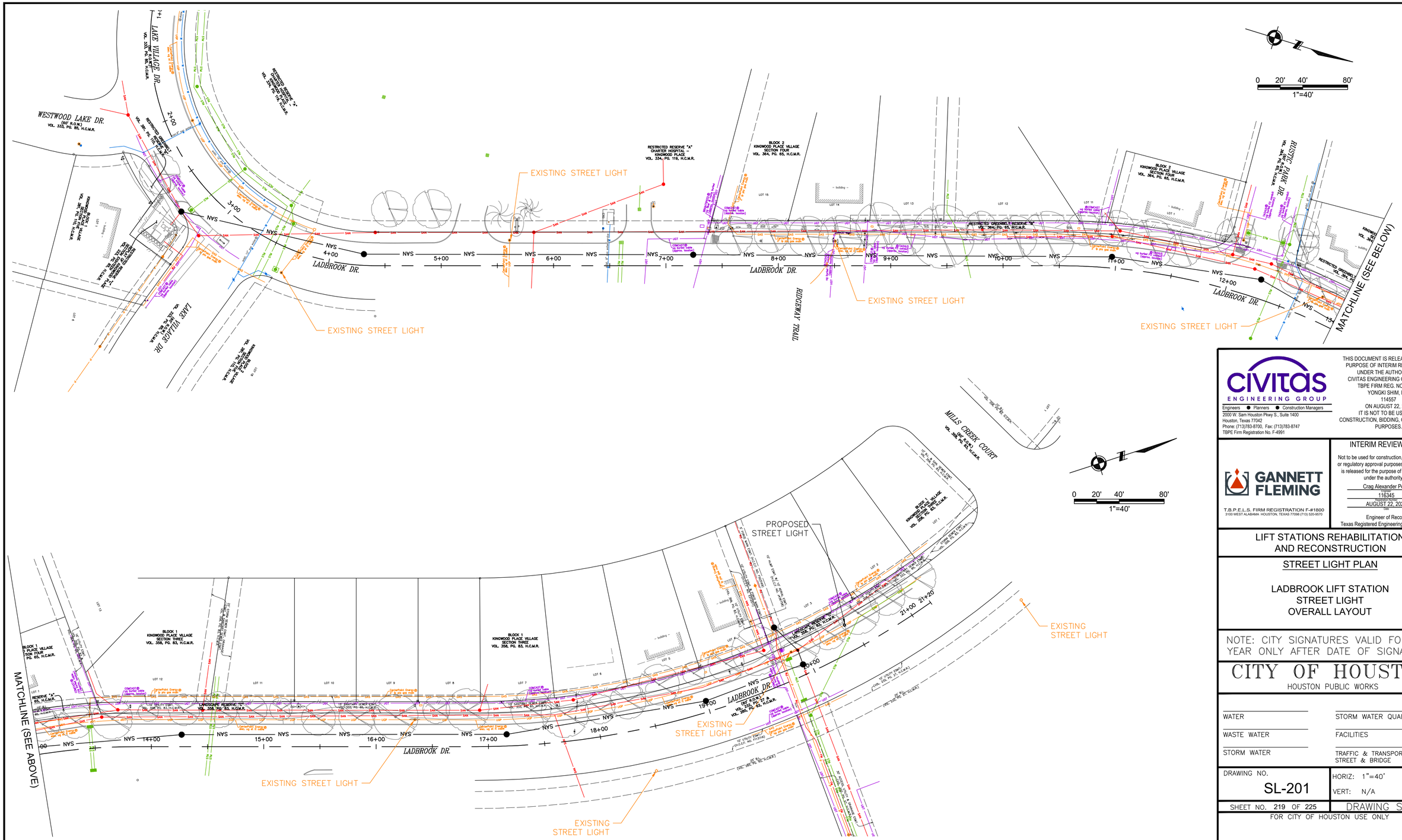
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. TC-301	HORIZ: 1"=100' VERT: N/A
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NO.	DATE	REVISION	APP.

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Engineers ● Planners ● Construction Managers
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Houston, Texas 77042
Phone: (713)783-8700, Fax: (713)783-8747
TBPE Firm Registration No. F-4991

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Craig Alexander Perry
116345
AUGUST 22, 2025
Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STREET LIGHT PLAN

LADBROOK LIFT STATION
STREET LIGHT
OVERALL LAYOUT

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SL-201

HORIZ: 1"=40'
VERT: N/A

SHEET NO. 219 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: R:\332 DEC\2301 COH Lift Station Rehab\PROD\3.2 CAD\3.2.2 General\SL-201 LADBROOK LIFT STATION STREET LIGHT OVERALL LAYOUT.dwg

STRAIN POLE FOUNDATION DESIGN TABLE

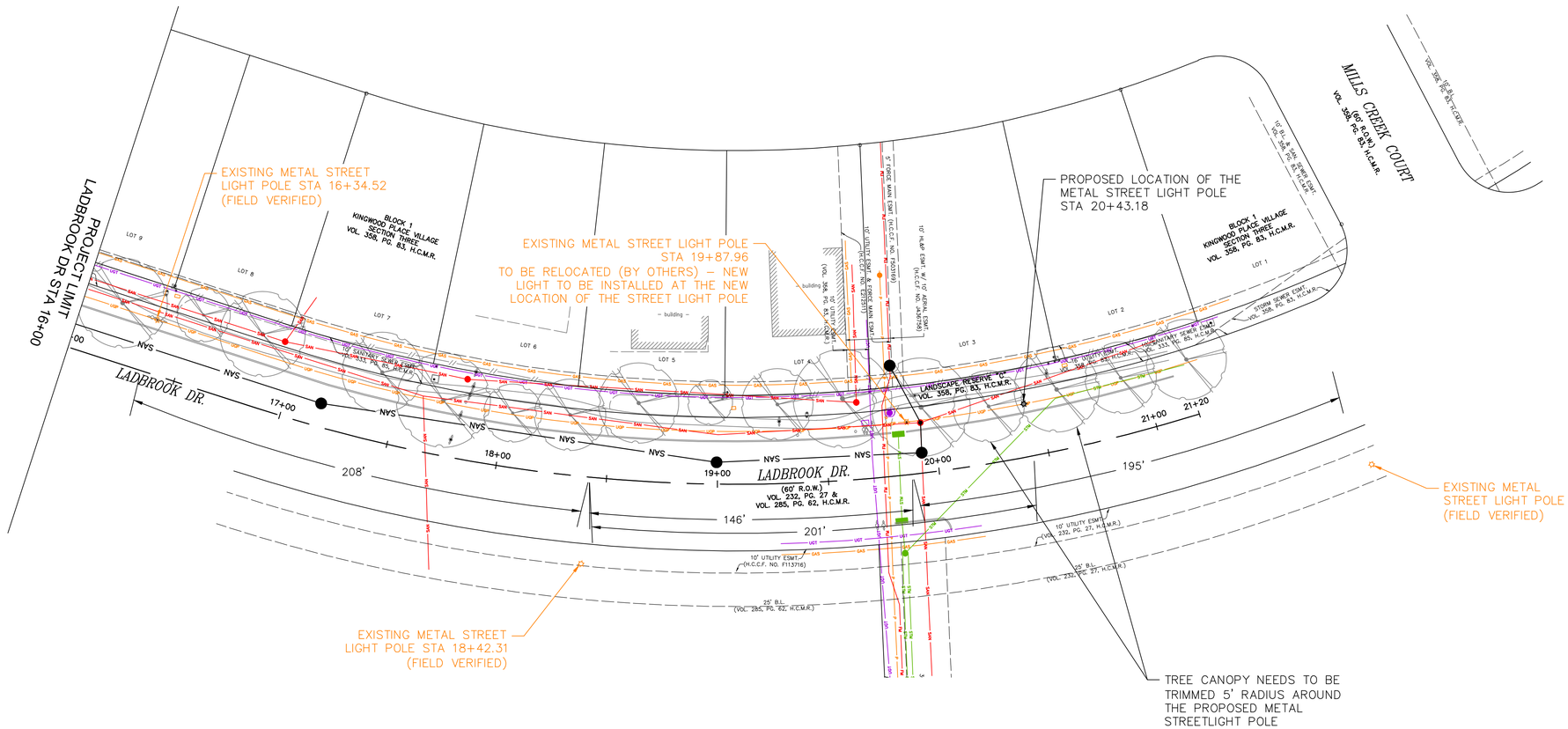
FOUNDATION TYPE	REINFORCING STEEL: DRILLED SHAFT DIAMETER	REINFORCING STEEL: VERTICAL BARS	REINFORCING STEEL: ADDITIONAL VERTICAL BARS	REINFORCING STEEL: SPIRAL & PITCH	DRILLED SHAFT DEPTH	ANCHOR BOLT DESIGN: ANCHOR BOLT DIAMETER	ANCHOR BOLT DESIGN: Fy	ANCHOR BOLT DESIGN: BOLT CIRCLE DIAMETER	FOUNDATION DESIGN LOAD: MOMENT	FOUNDATION DESIGN LOAD: SHEAR	FOUNDATION DESIGN LOAD: TORQUE	TYPICAL APPLICATION
DESCRIPTION	IN.				FT.	IN.	KSI	IN.	K-FT.	KIPS	K-FT.	
10030	30"	8-#9	8-#9x7'-6"	#3@6"	16'-0"	2 3/4"	55	19"	184	7	0	CLAMP-ON MAST ARM ASSEMBLY, 30' STRAIN POLE WITH OR WITHOUT LUMINAIRE
									103	5	9.3	
10036	36"	8-#10	8-#10x8'-0"	#3@6"	14'-0"	2 3/4"	55	21"	236	8	0	CLAMP-ON MAST ARM ASSEMBLY, 34' STRAIN POLE WITH OR WITHOUT LUMINAIRE
									133	5	104	

FOUNDATION SELECTION FOR STANDARD CLAMP-ON MAST ARM ASSEMBLIES

	FOUNDATION TYPE	HC10030	HC10036
100 MPH DESIGN WIND SPEED	MAXIMUM SINGLE CLAMP-ON MAST ARM LENGTH	44'	44'
	MAXIMUM DUAL CLAMP-ON MAST ARM LENGTH	30' x 30'	44' x 44'
		40' x 35'	
		42' x 30'	
		44' x 20'	

STRAIN POLE FOUNDATION SUMMARY TABLE

LOCATION IDENTIFICATION	FOUNDATION TYPE	NUMBER (EA)	DRILLED SHAFT LENGTH (FEET) HC10030	DRILLED SHAFT LENGTH (FEET) HC10036	EXPOSED FOUNDATION (FEET)	TOTAL SHAFT LENGTH (FEET)



0 15' 30' 60'

1"=30'

NO.	DATE	REVISION	APP.

PEN TABLE: ----

PLOTTED: 8/21/2025 3:10 PM

LEGEND:

PROPOSED METAL STREET LIGHT

civitas ENGINEERING GROUP

Engineers ● Planners ● Construction Managers

2000 W. Sam Houston Pkwy S., Suite 1400
Houston, Texas 77042
Phone: (713)783-8700, Fax: (713)783-8747
TBPE Firm Registration No. F-4991

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YONGKI SHIM, P.E.
114557
ON AUGUST 22, 2025
IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMITTING PURPOSES.

GANNETT FLEMING

T.B.P.E.L.S. FIRM REGISTRATION F-#1800
3100 WEST ALABAMA HOUSTON, TEXAS 77098 (713) 520-9570

INTERIM REVIEW ONLY

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Craig Alexander Perry
116345
Registration Number
AUGUST 22, 2025
Date

Engineer of Record
Texas Registered Engineering Firm F-#1800

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

STREET LIGHT PLAN

LADBROOK LIFT STATION
STREET LIGHT
PLAN

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. SL-203

HORIZ: 1"=30'

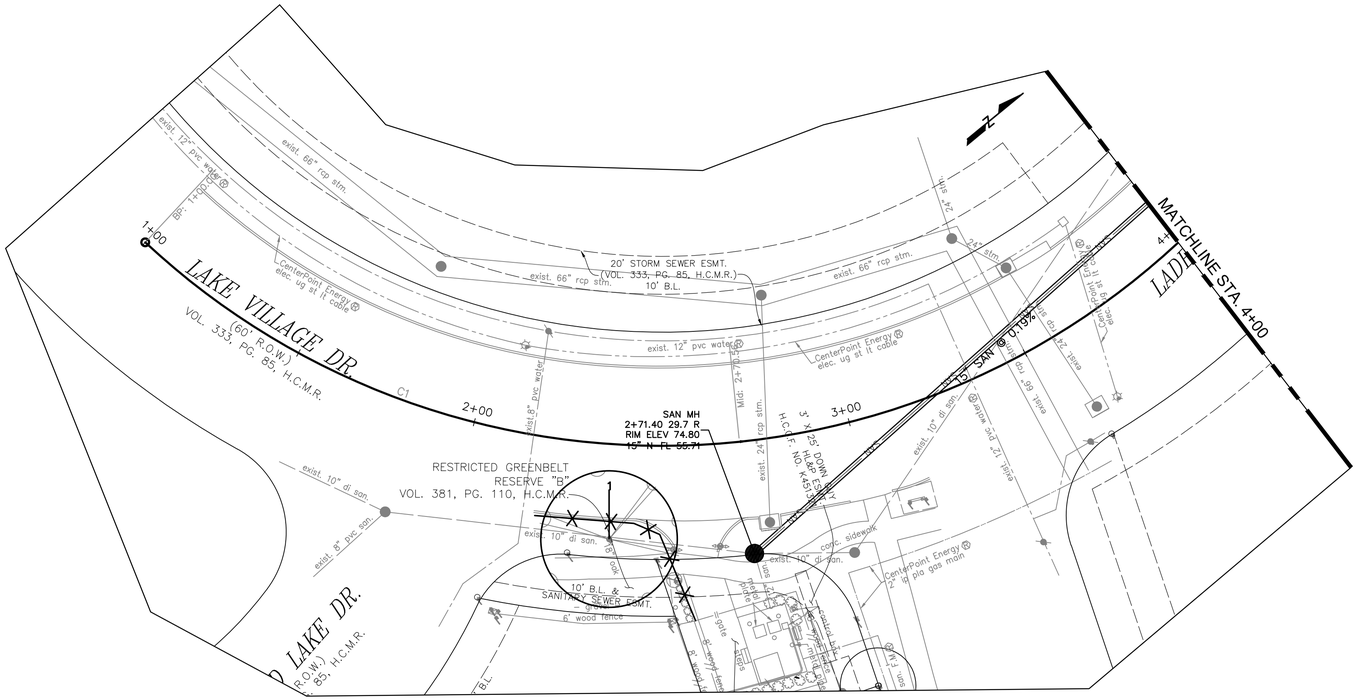
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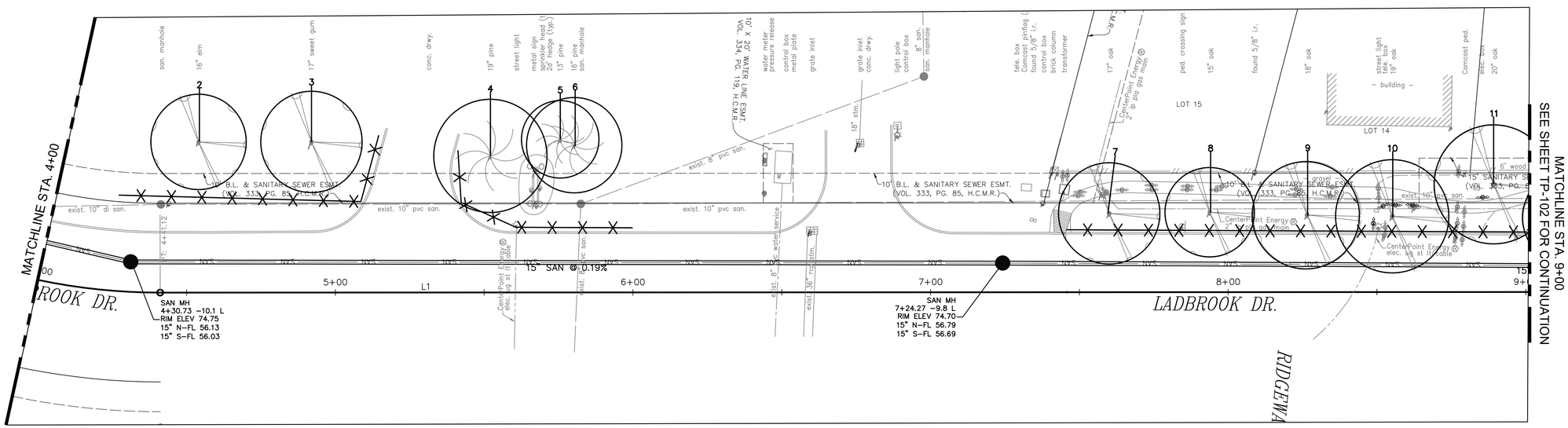
SHEET NO. 221 OF 225

DRAWING SCALE

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TREE TREATMENT SCHEDULE

TREE ID	DIAMETER	SPECIES	CONDITION	STATUS	TREATMENT	COMMENTS
1	18	LIVE OAK	GOOD	PRESERVE	FENCING	
2	16	CEDAR ELM	GOOD	PRESERVE	FENCING, CLEARANCE PRUNE	CLEARANCE PRUNE
3	17	SWEETGUM	GOOD	PRESERVE	FENCING	
4	19	LOBLOLLY PINE	GOOD	PRESERVE	FENCING	
5	13	LOBLOLLY PINE	GOOD	PRESERVE	FENCING	TRUNK WOUND (HEALED)
6	16	LOBLOLLY PINE	GOOD	PRESERVE	FENCING	
7	17	LIVE OAK	GOOD	PRESERVE	FENCING	
8	15	LIVE OAK	GOOD	PRESERVE	FENCING	
9	18	LIVE OAK	GOOD	PRESERVE	FENCING	
10	19	LIVE OAK	GOOD	PRESERVE	FENCING	
11	20	LIVE OAK	FAIR	PRESERVE	FENCING	

TREE PROTECTION NOTES:

1. Construction activity is restricted to areas outside protected tree Critical Root Zones as shown on drawings
2. Tree protection fencing must be maintained for duration of construction activities in the area.
3. Refer to Tree Treatment Schedule and Tree Treatment Specifications and Details for implementation of the Tree Protection Plan.
4. Refer to Landscape Planting Plan for tree mitigation plantings.
5. Locate bore pits outside tree Critical Root Zones as shown on drawings.

LEGEND

- # Protected Tree with critical root zone area (Refer to Tree Treatment Schedule)
- # Removal Tree
- X RP X ROOT PRUNING
- X X X Tree Protection Fencing

NO.	DATE	REVISION	APP.

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310 Longmire, Conroe, TX 77304
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INTERIM REVIEW ONLY

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PAUL S. HOWARD
User Engineer
N/A
Registration Number
August 22, 2025
Date

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TREE PROTECTION AND MITIGATION PLAN
LADBROOK DRIVE

STA 1+00 TO 9+00

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
WASTE WATER
STORM WATER
STORM WATER QUALITY
FACILITIES
TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

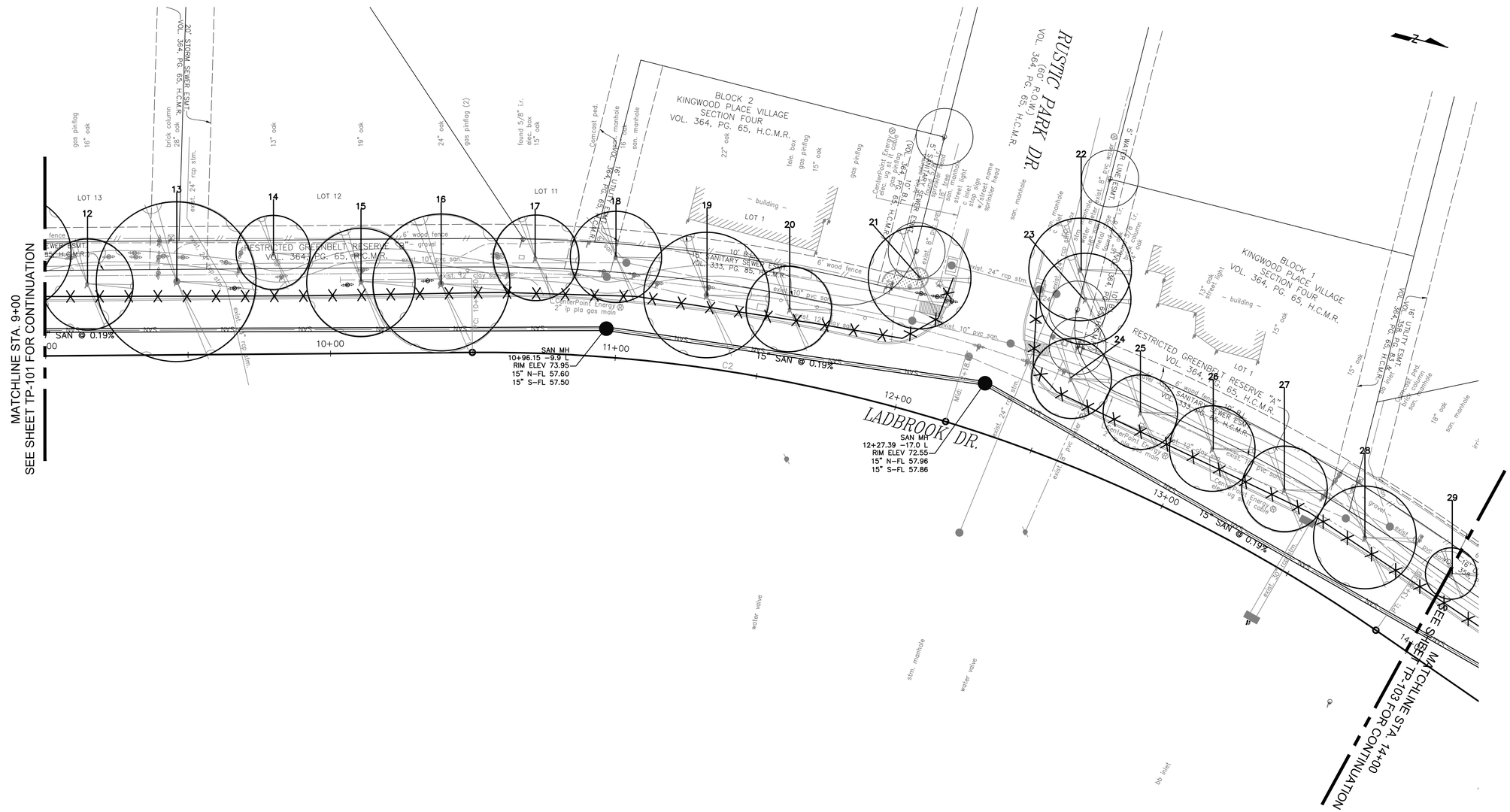
DRAWING NO. TP-201

HORIZ: 1"=20'
VERT: N/A

SHEET NO. 222 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY



TREE TREATMENT SCHEDULE

TREE ID	DIAMETER	SPECIES	CONDITION	STATUS	TREATMENT	COMMENTS
12	16	LIVE OAK	FAIR	PRESERVE	FENCING	
13	28	LIVE OAK	FAIR	PRESERVE	FENCING	
14	13	LIVE OAK	GOOD	PRESERVE	FENCING	
15	19	LIVE OAK	GOOD	PRESERVE	FENCING	
16	24	LIVE OAK	GOOD	PRESERVE	FENCING	
17	15	LIVE OAK	GOOD	PRESERVE	FENCING	
18	16	LIVE OAK	GOOD	PRESERVE	FENCING	
19	22	LIVE OAK	GOOD	PRESERVE	FENCING	
20	15	LIVE OAK	GOOD	PRESERVE	FENCING	
21	18	LIVE OAK	GOOD	PRESERVE	FENCING, CLEARANCE PRUNE	CLEARANCE PRUNE
22	18	WILLOW OAK	GOOD	PRESERVE	FENCING	
23	16	WILLOW OAK	GOOD	PRESERVE	FENCING	
24	14	LIVE OAK	GOOD	PRESERVE	FENCING	
25	13	LIVE OAK	FAIR	PRESERVE	FENCING	
26	15	LIVE OAK	GOOD	PRESERVE	FENCING	
27	15	LIVE OAK	GOOD	PRESERVE	FENCING	
28	18	LIVE OAK	FAIR	PRESERVE	FENCING	
29	9	LIVE OAK	GOOD	PRESERVE	FENCING	

TREE PROTECTION NOTES:

1. Construction activity is restricted to areas outside protected tree Critical Root Zones as shown on drawings
2. Tree protection fencing must be maintained for duration of construction activities in the area.
3. Refer to Tree Treatment Schedule and Tree Treatment Specifications and Details for implementation of the Tree Protection Plan.
4. Refer to Landscape Planting Plan for tree mitigation plantings.
5. Locate bore pits outside tree Critical Root Zones as shown on drawings.

LEGEND

- Protected Tree with critical root zone area (Refer to Tree Treatment Schedule)
- Removal Tree
- –RP– ROOT PRUNING
- Tree Protection Fencing

NO.	DATE	REVISION	APP.

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www.burditt.com

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PAUL S. HOWARD
Name of Engineer
N/A
Registration Number
August 22, 2025
Date

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TREE PROTECTION AND MITIGATION PLAN
LADBROOK DRIVE

STA 9+00 TO 14+00

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

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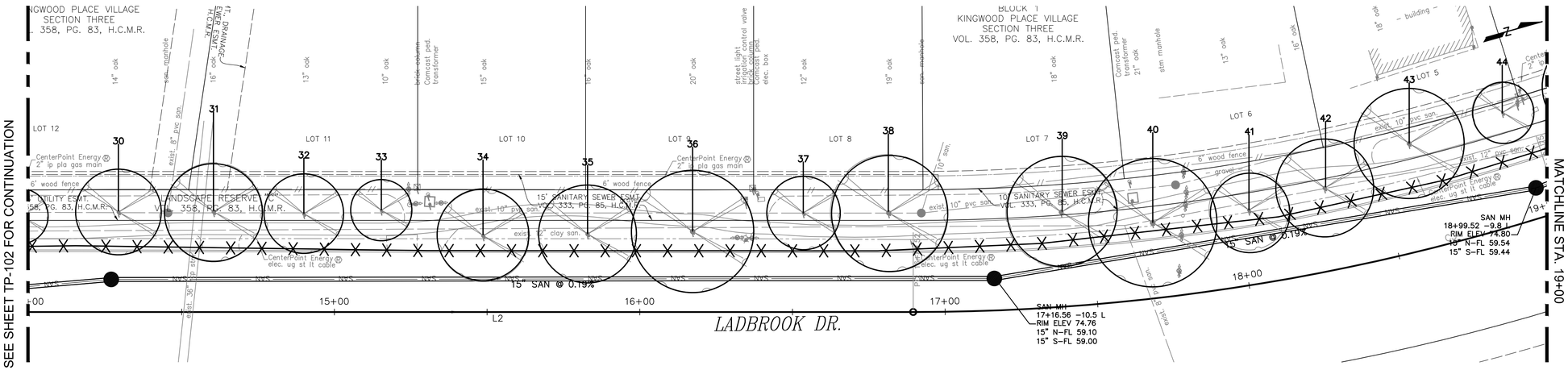
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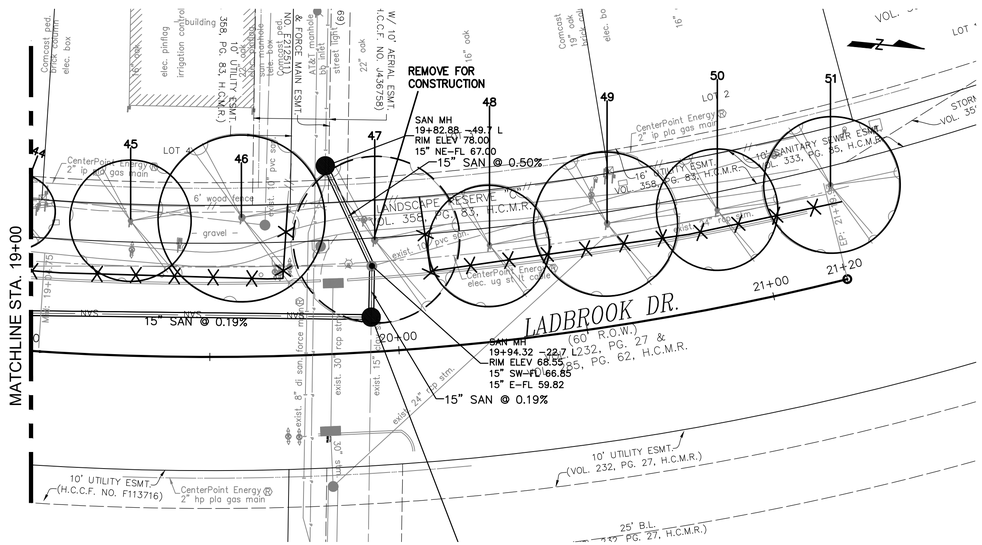
SHEET NO. 223 OF 225

DRAWING SCALE

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TREE PROTECTION NOTES:

1. Construction activity is restricted to areas outside protected tree Critical Root Zones as shown on drawings
2. Tree protection fencing must be maintained for duration of construction activities in the area.
3. Refer to Tree Treatment Schedule and Tree Treatment Specifications and Details for implementation of the Tree Protection Plan.
4. Refer to Landscape Planting Plan for tree mitigation plantings.
5. Rotate bore pits outside tree Critical Root Zones as shown on drawings.

LEGEND

- Protected Tree with critical root zone area (Refer to Tree Treatment Schedule)
- Removal Tree
- -X RP X- ROOT PRUNING
- -X-X-X- Tree Protection Fencing

TREE TREATMENT SCHEDULE

TREE ID	DIAMETER	SPECIES	CONDITION	STATUS	TREATMENT	COMMENTS
30	14	LIVE OAK	GOOD	PRESERVE	FENCING	
31	16	LIVE OAK	GOOD	PRESERVE	FENCING	
32	13	LIVE OAK	FAIR	PRESERVE	FENCING	
33	10	LIVE OAK	FAIR	PRESERVE	FENCING	POOR FORM
34	15	LIVE OAK	FAIR - GOOD	PRESERVE	FENCING	
35	16	LIVE OAK	FAIR-POOR	PRESERVE	FENCING	DIEBACK
36	20	LIVE OAK	FAIR	PRESERVE	FENCING	
37	12	LIVE OAK	FAIR	PRESERVE	FENCING	
38	19	LIVE OAK	FAIR-POOR	PRESERVE	FENCING	DIEBACK
39	18	LIVE OAK	FAIR-GOOD	PRESERVE	FENCING	
40	21	LIVE OAK	FAIR	PRESERVE	FENCING	
41	13	LIVE OAK	POOR	PRESERVE	FENCING	DIEBACK
42	16	LIVE OAK	POOR	PRESERVE	FENCING	
43	18	LIVE OAK	GOOD	PRESERVE	FENCING	
44	10	LIVE OAK	GOOD	PRESERVE	FENCING	
45	16	LIVE OAK	GOOD	PRESERVE	FENCING	
46	22	LIVE OAK	GOOD	PRESERVE	FENCING	
47	22	LIVE OAK	GOOD	REMOVE AND REPLACE	REMOVE	MANHOLE CLOSE TO TREE (3 FT)
48	16	LIVE OAK	GOOD	PRESERVE	FENCING	
49	19	LIVE OAK	GOOD	PRESERVE	FENCING	
50	16	LIVE OAK	GOOD	PRESERVE	FENCING	
51	18	LIVE OAK	GOOD	PRESERVE	FENCING	

TREE TREATMENT SCHEDULE

STATUS/TREATMENT		Total Trees	Total Inches
REMOVE FOR CONSTRUCTION (REPLACE INCH FOR INCH)		1	22
FENCING	1,636	LINEAR FEET	
REPLACEMENT PLANTING (No. of Trees)		6	4" CALIPER
CLEARANCE PRUNING		2	

Note: Replacement tree planting locations are at the direction of the City of Houston Parks Department.

NO.	DATE	REVISION	APP.

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LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TREE PROTECTION AND MITIGATION PLAN
LADBROOK DRIVE

STA 19+00 TO END

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER
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STORM WATER
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DRAWING NO. TP-203

HORIZ: 1"=20'
VERT: N/A

SHEET NO. 224 OF 225

DRAWING SCALE

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TREE TREATMENT SPECIFICATIONS AND DETAILS

TREE PRESERVATION AND TREATMENT SPECIFICATIONS

These Specifications are supplemental to the City of Houston Standard Specifications, Section 01562– Tree and Plant Protection.

PART 1 – GENERAL

1.1 SUMMARY

A. Work includes:

1. Removal operation.
2. Maintenance pruning.
3. Fertilization treatment.
4. Tree protection fencing installation.
5. Mulching operation.
6. Root pruning operation.
7. Root pruning/chemical barrier operation.
8. Utility boring operation.
9. Zero curb cut operation.
10. Transplant operation.
11. Replacement planting.
12. Repair/replacement operation.
13. Sidewalk installation.

B. All Contractors shall meet with the Urban Forester or Owner's Representative to review the Tree Preservation Plan for the site before startup of site work.

C. No site construction shall begin in any areas where tree preservation and treatment measures have not been implemented and approved.

D. Tree preservation and treatment measures shall be reviewed and approved by the Urban Forester or Owner's Representative prior to and immediately following installation.

E. Contractor shall be responsible for compliance to and maintenance of the Tree Preservation Plan.

F. The areas protected by the tree protection fencing are the tree preservation areas. No access to these areas shall be permitted during the construction period without first consulting with the Urban Forester or Owner's Representative.

G. Any roots of preservation trees exposed by construction activity shall be covered with a layer of light topsoil or 10 mil. polyethylene sheeting to prevent desiccation and loss of exposed roots.

H. Any work, excavation, or grading required by construction within the tree preservation areas shall be limited to 2' cut or fill with no roots over 1/2" being cut. This work shall be by hand or with approved equipment and root protection.

I. Trees damaged or lost due to Contractor's negligence during the construction period shall be appraised by the Urban Forester or Owner's Representative and the Owner compensated.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Fertilizer – "XL Injecto Feed" (32–7–7), a product of Dogget Corporation, Lebanon, NJ, (800) 448–1862.

B. Mycorrhizal Fungi – MycorTree Ecto–injectable, a product of Plant Health Care, Inc., (800) 421–9051.

C. Tree Protection Fencing:

1. 4' tall plastic, 1" mesh fence.
2. Iron T–bar posts, 6' tall.
3. Wire, 16 gauge ties.

D. Polyethylene Sheeting: minimum 10 mil. thickness, clear.

E. Mulch: First run mulch or site generated mulch.

F. Products of the same type from other sources shall not be excluded, provided they have like physical and functional characteristics and are approved by the Urban Forester or Owner's Representative.

G. Every effort shall be made to utilize chemicals of an organic or biogradable nature in order to offer the least impact to the environment.

PART 3 – IMPLEMENTATION

3.1 TREATMENTS

A. Removal Operation: (Treatment A).

1. Trees designated to be removed by hand on the Tree Preservation Plan shall be painted with an "X" by the Urban Forester or Owner's Representative.
2. Designated removal trees shall be replaced on an inch for inch basis for the total diameter inches removed.
3. Plant replacement trees as near as possible to their original location (See planting procedure).
4. All tree removals shall be done by a certified Arborist by hand work.
5. All wood and debris from tree removal shall be removed from the site immediately.
6. All stumps shall be ground down to 12" below grade.
7. Any damage to preservation trees occurring during the removal operation shall be repaired.

B. Maintenance Pruning: (Treatment B).

1. Trees to be pruned are designated on the Tree Treatment Schedule and will be identified by the Urban Forester or Owner's Representative.
2. All maintenance pruning work shall be done by a certified Arborist.
3. A Tree Treatment Schedule listing the preservation trees and treatments will be provided.
4. Pruning shall consist of the following method:
   (a) Pruning as defined by the American National Standard for Tree Care Operations – Tree Shrub and Other Woody Plant Maintenance Standards. This would include:
      (1) Crown raising or clearance pruning shall consist of the removal of the lower branches of a tree to provide clearance for streets and sidewalks while maintaining a balanced form.
   (b) All pruning cuts on Oak trees shall be covered with a thin coat of water–based black paint approved by Urban Forester or Owner's Representative if pruning is to occur in April, May, or June.
   (c) All wood and debris from pruning operations shall be removed from the site.

C. Fertilization Treatment – (Treatment C).

1. Preservation trees shall be treated as designated on the Tree Treatment Schedule.
2. Injection of the fertilizer into the root zone of a tree shall consist of the following methods:
   (a) Mix in a tank with agitation capability:
      (1) Fertilizer – 9 pounds by weight per 100 gallons water.
      (2) Mycorrhizal Fungi – 1 lb. per 100 gallons water.
   (b) Inject the Mixture on a 2.5 ft. square grid at 1/2 gallon of mix per hole or 8 gallons per 100 square feet.
   (c) Injection pressure shall be 100–150 PSI as soil conditions warrant.
   (d) Depth of injection shall be 6 – 12 inches.
   (e) Inject the root zone areas, where possible, in the available canopy areas plus 10 feet beyond dripline, but not in root loss zone.
3. Contractor is responsible for mixing, applying and disposal of all chemicals in accordance with strict adherence to manufacturer's directions and/or State and Federal Regulations.

D. Tree Protection Fencing Installation (Treatment D – refer to Tree Preservation Details).

1. Tree protection fencing is designated in the Tree Preservation Plan.
2. Fencing as follows:
   (a) Fabric, 4' tall plastic fence.
   (b) Iron T–bar posts, 6' tall, placed 8' – 0" on center, 24" into the ground.
   (c) Fence is to be attached to posts with wire ties placed every 24" on center.
   (d) Fence is to be placed a minimum of 1 foot from all root prune lines.
3. No access to fenced areas shall be permitted without prior approval of the Urban Forester or Owner's Representative.
4. Contractor shall provide for maintenance and repair of fencing during site work

E. Mulching Operations (Treatment E).

1. A 4" layer of mulch shall be placed in the canopy area of trees where exposed soil or roots are present.
2. Approved access through the canopy areas foar construction equipment or vehicles shall be covered with 6" of mulch covered by 3/4" plywood.

F. Root Pruning Operation (Treatment F – refer to Tree Preservation Details).

1. Trenching areas are designated in the Tree Preservation Plan and exact locations will be marked in the field by the Urban Forester or Owner's Representative.
2. All encroachments located in the canopy of trees shall have the tree side of the excavation root pruned before excavation.
3. Trenching shall be backfilled and compacted immediately after trenching.
4. Trenching shall be backfilled and compacted immediately after trenching.
5. All excavated material shall be placed outside the canopy of the tree or on plywood cover under the canopy of the tree to protect the root zone area.
6. Topsoil should be kept aside so as not to mix with sub grade material and placed back in the pit on the top of the backfill.

G. Root Pruning/Chemical Barrier Installation (Treatment G–refer to Tree Treatment Details).

1. Root Pruning Chemical barrier shall be installed where root pruning is scheduled to be done at the back of curb line for the new curb line.
2. All specifications for root pruning trenching shall apply to this installation with the following additional requirements:
   (a) 10 mil Polyethylene sheeting shall be placed in the trench to the bottom of the trench.
   (b) Anchor sheeting at the top of the trench in order to backfill the trench.
   (c) Cover the top of the sheeting so that no sheeting is exposed.

H. Utility Boring (Treatment H.).

1. All utilities will be bored through the Critical Root Zone (CRZ) of all protected trees.
2. Bore pits will be outside the CRZ of each protected tree.
3. Bore layout must be approved in the field by the Urban Forester or Owner's Representative.
4. Any necessary excavations within the CRZ of protected trees will require the approval of the Urban Forester or Owner's Representative.

I. Zero Curb Cut Operation (Treatment I–refer to Tree Treatment Details).

1. Removal of the old curb located within the canopy area of preservation trees will be done in the following manner:
   (a) Dig our the existing street in front of curb to the bottom of existing curb.
   (b) Remove existing curb by pulling it into the street excavation without digging or clawing behind the curb.
   (c) Cover the exposed soil and roots immediately with 10 mil clear plastic to prevent desiccation of roots.
   (d) Anchor the plastic cover with wooden stakes driven into the soil (avoiding tree roots) behind the old curb edge.
   (e) Plastic shall be removed at the same time as backfill is being placed so that the roots are not exposed to air.
   (f) New curb installation shall be formed and poured without disturance or damage to the exposed roots located at the edge of the oldremoved curb.
   (g) Where necessary, backfill between the old and new curb area shall consit of:
      (1) Backfill void up to within 6" of the top of the curb with a material acceptable to engineering standards. This material shall be clean and free of rocks, debris, or chemical residues that pose a threat to the root environment.
      (2) The remaining 6" of fill behind the curb shall be of the specified topsoil mix.
   (h) Back fill behind the old curb area (Tree Preservation Area) shall consist of the specified topsoil mix. This mix shall be applied in depths of no greater than 3" to the critical root zones of the protected trees by hand.

J. Transplant Operation (Treatment J refer to Tree Treatment Details).

1. Trees designated for transplanting are designated in the Tree Treatment Schedule.
2. Transplants are to be relocated to a location determined by the Urban Forester or Owner's Representative.
3. Contractor shall be responsible for proper relocation, planting, and maintenance of the transpianted trees for one (1) year.

K. Replacement Planting (Refer to Tree Treatment Details).

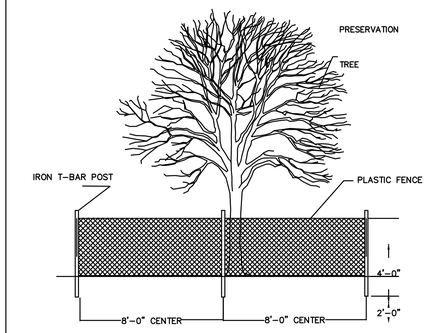
1. Replacement tree planting locations shall be indicated by the owner's representative.
2. Contractor is responsible for verifying locations of underground utilities prior to construction.
3. Trees shall be planted at least five (5') feet from any utility line, curb or sidewalk and outside all utility easements.
4. All plant material shall be maintained in a healthy growing condition, and must be replaced with plant material of similar variety and size if damaged, destroyed, diseased, or removed.
5. Measurement: Dimensions of trees and shrubs shall conform to the American Standard for Nursery Stock, latest edition (ANSI Z–60).
6. All trees shall be staked and secured according to accepted industry practice and details.
7. Each newly planted tree and shrub shall be pruned in accordance with the American Association of Nurserymen Standards or as directed by owner's representative to preserve the natural character of the plant. All dead wood, sucker, and broken or badly bruised branches shall be removed.
8. Guarantee: All plant material shall be guaranteed by the contractor for one full year from the date of installation. The owner shall be responsible for maintenance unless otherwise agreed with contractor. It shall be the contractor's responsibility to monitor the project during the guarantee period and inform the owner if problems develop with the plant material. A plant shall be considered dead if 25% or more of the crown, or main leader has died.

L. Repair/Replacement Operations

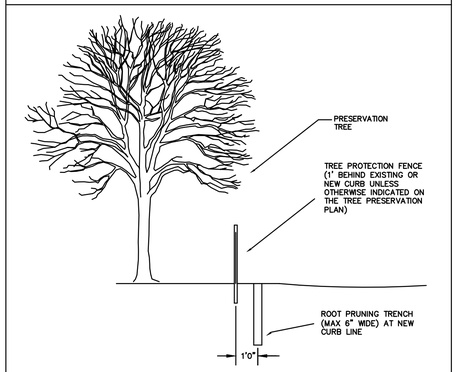
1. If any damage to preservation trees should occur beyond what is expected during the construction period, the Urban Forester or Owner's Representative shall appraise the damage and order the repair by the contractor or responsible party.
2. Trees other than those designated for removal that are destroyed or irreparably damaged as a result of construction operations, shall be removed and replaced with the same size species and variety up to and including 8 inches in diameter. Trees larger than 8 inches in diameter shall be replaced with an 8–inch diameter tree of the same species and variety and total contract amount will be reduced as determined by a qualified appraiser using the Guide for Plant Appraisal published by the International Society of Arboriculture (9th Edition 2000).
3. Owner shall be compensated for all costs involved in mitigation of damages and the appraisal thereof by the Urban Forester or Owner's Representative.

M. Sidewalk Installation (Treatment M)

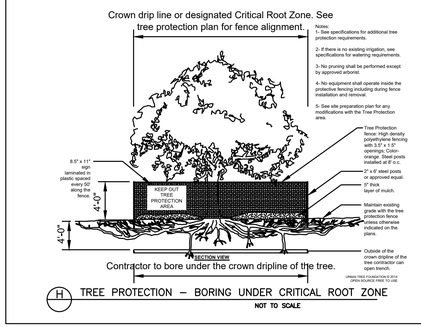
1. Route new sidewalks as far away from tree trunks as possible.
2. New sidewalks to be installed in the Critical Root Zone of protected trees shall be installed without excavating into grade and destroying vital roots.
3. Where possible, install new sidewalks in the footprint of the old sidewalks without disturbing underlying roots or existing grade.
4. Demolition of old sidewalks shall be done without disturbing underlying roots or existing grade.
5. All roots exposed from either demolition of an existing sidewalk or removal of vegetation cover shall be covered with 10 millimeter plastic sheeting or 2 inches of sand to prevent desiccation of roots.
6. No stabilized sand shall be used for sidewalks or in the Critical Root Zonees of protected trees. Substitute geo–textile fabric for stabilized base.
7. Positive drainage must be maintained or provided in the Critical Root Zone where new sidewalks are to be installed.



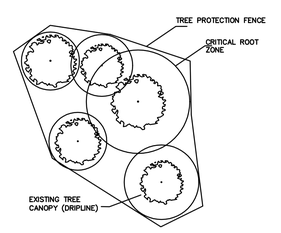
D 1 FRONT VIEW – TREE PROTECTION FENCING DETAIL
NOT TO SCALE



F SIDEVIEW – ROOT PRUNING DETAIL
NOT TO SCALE



H TREE PROTECTION – BORING UNDER CRITICAL ROOT ZONE
NOT TO SCALE



D 2 PLAN VIEW – TREE PROTECTION FENCING GROUPING OF TREES
NOT TO SCALE

TREE PROTECTION NOTES:

1. Construction activity is restricted to areas outside protected tree Critical Root Zones as shown on drawings
2. Tree protection fencing must be maintained for duration of construction activities in the area.
3. Refer to Tree Treatment Schedule and Tree Treatment Specifications and Details for implementation of the Tree Protection Plan.
4. Refer to Landscape Planting Plan for tree mitigation plantings.
5. Rotate bore pits outside tree Critical Root Zones as shown on drawings.

NO.	DATE	REVISION	APP.

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INTERIM REVIEW ONLY

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PAUL S. HOWARD
Licensed Landscape Architect
N/A
Registration Number
August 22, 2025
Date

LIFT STATIONS REHABILITATION AND RECONSTRUCTION

TREE PROTECTION AND MITIGATION PLAN
LADBROOK DRIVE

TREE TREATMENT SPECIFICATIONS AND DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. TP-204

HORIZ: 1"=20'
VERT: N/A

SHEET NO. 225 OF 225

DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

FILE PATH: G:\Shared Drives\Clients_G-L\Gannett Fleming\Ladbrook Lift Stations\7000 Construction Documents\7030 Drawings\B-TREE-PROTECTION-LADBROOK.dwg